

UNCLASSIFIED

AD NUMBER

AD856897

LIMITATION CHANGES

TO:

Approved for public release; distribution is unlimited.

FROM:

Distribution authorized to U.S. Gov't. agencies only; Proprietary Information; 02 APR 1969. Other requests shall be referred to Space and Missile Systems Organization, Los Angeles, CA 90045.

AUTHORITY

SAMSO ltr, 16 Aug 1973

THIS PAGE IS UNCLASSIFIED

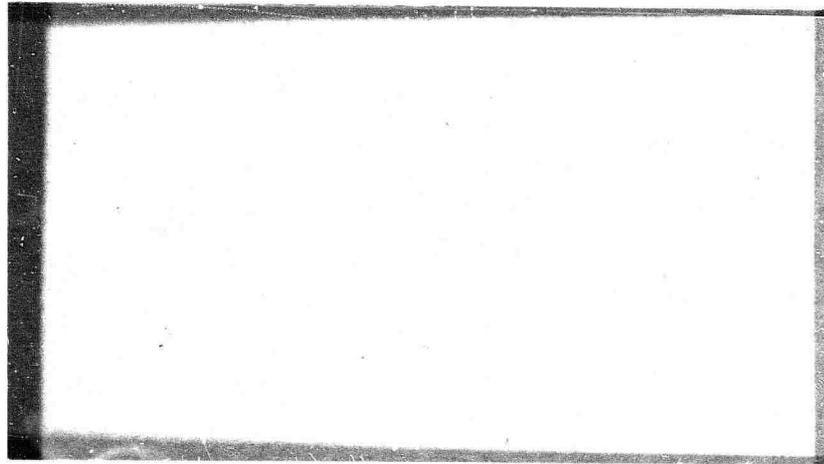
AD856897

SAFSA-SK,
J.P. RICH

20T

UT-708

①



EACH TRANSMISSION OF THIS DOCUMENT OUTSIDE
THE AGENCIES OF THE US GOVERNMENT MUST HAVE
PRIOR APPROVAL OF THE OFFICE OF INFORMATION
(SMEA), SPACE & MISSILE SYSTEMS ORGANIZATION,
AF UNIT P.O., LOS ANGELES, CA 90045

to DDC
RECEIVED
AUG 21 1969
RECEIVED
B

MCDONNELL

125

AD856897

DATE 31 May 1968

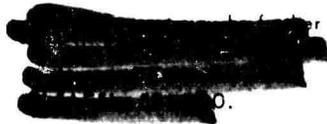
REVISED 2 April 1969

EACH TRANSMISSION OF THIS DOCUMENT OUTSIDE
THE AGENCIES OF THE US GOVERNMENT MUST HAVE
PRIOR APPROVAL OF THE OFFICE OF INFORMATION
(SMBA), SPACE & MISSILE SYSTEMS ORGANIZATION,
AF UNIT P.O., LOS ANGELES, CA 90045
~~TEST PLAN~~

REPORT E217

COPY NO. 1

SUBMITTED UNDER CONTRACT NO. F04695-67-C-0023



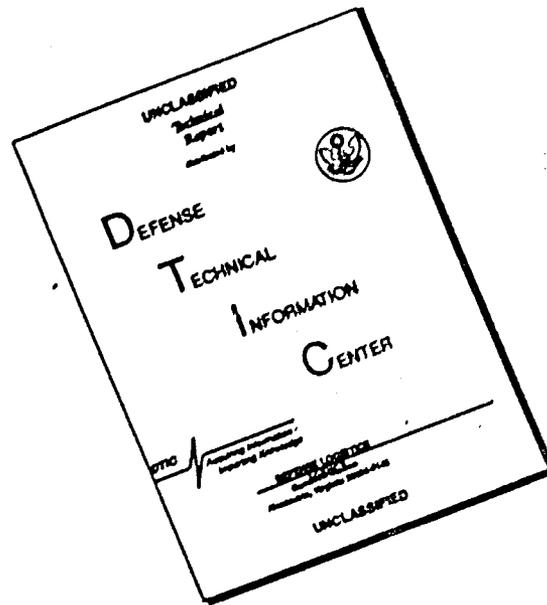
MCDONNELL ASTRONAUTICS COMPANY

St. Louis, Missouri 63166 (314) 232-0232

MCDONNELL DOUGLAS

CORPORATION

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 1

REVISED 2 APRIL 1969

REPORT E217

REVISED _____

MODEL 195B

INDEX OF REVISIONS

| DATE | PAGES AFFECTED | | | REMARKS | REVISED BY | APPROVED |
|----------|---|---|----------------|---|-------------------|---|
| | REVISED | ADDED | REMOVED | | | |
| 2 APR 69 | TITLE, 1 thru 111, 1,2,4 thru 7, 10,11,13, 17,18,21 thru 24, 26,30,32, 33,35,41, 43,44,46, 51,53,54, 60,61,63, 64,67,68, 74 thru 79, 81 thru 84, 88,89,91, thru 93, 95 thru 105,107, 109 | iv thru ix 4A,60A, 76A,102A, 103A | A1 thru A19 | Revision A; Customer comments and update. | <i>S. Furlong</i> |  |

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968

REVISED 2 APRIL 1969

REVISED _____

PAGE 11

REPORT E217

MODEL 195B

PREFACE

THE SPACECRAFT SYSTEMS TEST (SST) PLAN AS OUTLINED IN THIS REPORT CONSTITUTES THE ACCEPTANCE TEST PLAN FOR THE GEMINI B SPACECRAFT UTILIZED IN THE MOL PROGRAM. THIS PLAN IS PREPARED IN ACCORDANCE WITH LINE ITEM 20T OF THE CONTRACT DATA REQUIREMENTS LIST (CDRL) AND AFLC/AFSC FORM 9(U)T-208 UNDER CONTRACT FO4695-67-C-0023, GEMINI B ACQUISITION PROGRAM.

THIS REPORT IS PREPARED IN TWO SECTIONS: SECTION I OUTLINES THE OVERALL TESTING PLAN ON GEMINI B SPACECRAFT AND SECTION II PROVIDES A BRIEF OUTLINE OF EACH TEST.

~~_____~~
~~_____~~
~~_____~~

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968

REVISED 2 APRIL 1969

REVISED _____

PAGE 111

REPORT E217

MODEL 195B

LIST OF ABBREVIATIONS

| | |
|-------|-------------------------------------|
| ACE | ATTITUDE CONTROL ELECTRONICS |
| ACEG | ATTITUDE CONTROL ELECTRONICS GROUP |
| ACSE | ATTITUDE CONTROL SYSTEM ELECTRONICS |
| ACTS | ATTITUDE CONTROL THRUSTER SYSTEM |
| ACPU | AUXILIARY COMPUTER POWER UNIT |
| ADAPT | ADAPTER |
| AGE | AEROSPACE GROUND EQUIPMENT |
| ASSY | ASSEMBLY |
| ASTRO | ASTRONAUT |
| ATM | AUXILIARY TAPE MEMORY |
| ATT | ATTITUDE |
| AVE | AEROSPACE VEHICLE EQUIPMENT |
| BATT | BATTERY |
| BCN | BEACON |
| BEF | BLUNT END FORWARD |
| CAL | CALIBRATION |
| CDDS | COMPUTER DATA DISPLAY SYSTEM |
| CDRL | CONTRACT DATA REQUIREMENTS LIST |
| c.g. | CENTER OF GRAVITY |
| CKTS | CIRCUITS |
| CMD | COMMAND |
| CNTL | CONTROL |
| c/o | CHECKOUT |
| COMM | COMMUNICATION |

DATE 2 APRIL 1969PAGE iv

REVISED _____

REPORT E217

REVISED _____

MODEL 195BLIST OF ABBREVIATIONS (CONTINUED)

| | |
|---------|---------------------------------|
| COND | CONDUCTOR |
| CTUM | CREW TRANSFER UMBILICAL |
| DAS | DATA ACQUISITION SYSTEM |
| ECS | ENVIRONMENTAL CONTROL SYSTEM |
| EFC | EQUIPMENT FUNCTIONAL CHECKS |
| EMER | EMERGENCY |
| EMI | ELECTRO-MAGNETIC INTERFERENCE |
| EVA | EXTRA-VEHICULAR ACTIVITY |
| EXT | EXTERNAL |
| FDI | FLIGHT DIRECTOR INDICATOR |
| F/M, FM | FREQUENCY MODULATION |
| GBQ | GEMINI B QUALIFICATION |
| G & C | GUIDANCE AND CONTROL |
| GIA | GUIDANCE INTERFACE ADAPTER |
| GOX | GASEOUS OXYGEN |
| GSO | GROUND SYSTEMS OPERATIONS |
| H/CNTL | HAND CONTROLLER |
| HESS | HIGH ENERGY SQUIB SIMULATOR |
| HF | HIGH FREQUENCY |
| HF/DF | HIGH FREQUENCY/DIRECTION FINDER |
| HX | HEAT EXCHANGER |
| Hz | HERTZ |
| IGS | INERTIAL GUIDANCE SYSTEM |
| IMU | INERTIAL MEASURING UNIT |

MCDONNELL

DATE 2 APRIL 1969

ST. LOUIS, MISSOURI

PAGE V

REVISED _____

REPRT E217

REVISED _____

MODEL 195B

LIST OF ABBREVIATIONS (CONTINUED)

| | |
|--------|---|
| INSTR | INSTRUMENTATION |
| IVI | INCREMENTAL VELOCITY INDICATOR |
| J/B | JUNCTION BOX |
| KBPS | KILO-BITS PER SECOND |
| L/H | LEFT HAND |
| LICH | LITHIUM HYDROXIDE |
| LP | LOW PRESSURE |
| LTS | LIGHTS |
| LV/L | LAUNCH VEHICLE/LABORATORY |
| MDIU | MANUAL DATA INPUT UNIT |
| MED | MEDICAL |
| MIC | MICROPHONE |
| MOL | MANNED ORBITING LABORATORY |
| MOL/LV | MANNED ORBITING LABORATORY/LAUNCH VEHICLE |
| MON | MONITOR |
| PACS | PAD ABORT CONTROL SYSTEM |
| PATE | PAD ABORT THRUSTER ELECTRONICS |
| PCM | PULSE-CODE-MODULATION |
| PRESS | PRESSURE |
| PRF | PULSE RATE FREQUENCY |
| PSA | PRESSURE SUIT ASSEMBLY |
| PWR | POWER |
| QUAL | QUALIFICATION |
| RCS | RE-ENTRY CONTROL SYSTEM |

MCDONNELL

DATE 2 APRIL 1969

ST. LOUIS, MISSOURI

PAGE vi

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

LIST OF ABBREVIATIONS (CONTINUED)

| | |
|---------|--|
| RCVR | RECEIVER |
| REFRIG | REFRIGERATION |
| REG | REGULATOR |
| RF | RADIO FREQUENCY |
| R/H | RIGHT HAND |
| RMS | ROOT MEAN SQUARE |
| S/C | SPACECRAFT |
| SCD | SPECIFICATION CONTROL DRAWING |
| SEF | SMALL END FORWARD |
| SEP | SEPARATE |
| SEQ | SEQUENTIAL |
| SGLS | SPACE GROUND LINK SYSTEM |
| SIM | SIMULATOR |
| SPL | SOUND PRESSURE LEVEL |
| SST | SPACECRAFT SYSTEMS TEST |
| STA | STATION |
| STE/STC | SPACECRAFT TEST ENGINEER/SPACECRAFT TEST CONDUCTOR |
| STDR | SPACE TECHNICAL DATA REPORT |
| SW | SWITCH |
| SWR | STANDING WAVE RATIO |
| SYS | SYSTEM |
| T-C | THERMOCOUPLE |
| TCA | THRUST CHAMBER ASSEMBLY |
| TM | TELEMETRY |

MCDONNELL

DATE 2 APRIL 1969

ST. LOUIS, MISSOURI

PAGE vii

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

LIST OF ABBREVIATIONS (CONTINUED)

| | |
|------|---------------------------------|
| T/P | TEST POINT |
| TQT | THERMAL QUALIFICATION TEST |
| T/R | TAPE RECORDER |
| T/R | TRANSMITTER-RECEIVER |
| TRS | TIME REFERENCE SYSTEM |
| UHF | ULTRA-HIGH FREQUENCY |
| UMB | UMBILICAL |
| VCO | VOLTAGE CONTROLLED OSCILLATOR |
| VHF | VERY HIGH FREQUENCY |
| VOM | VOLT-OHM-METER |
| VOX | VOICE OPERATED TRANSMITTER KEYS |
| VSWR | VOLTAGE STANDING WAVE RATIO |
| W/B | WIRE BUNDLE |
| XMTR | TRANSMITTER |

MCDONNELL

ST. LOUIS, MISSOURI

DATE 2 April 1969

REVISED _____

REVISED _____

PAGE viii

REPORT E217

MODEL 195B

TABLE OF CONTENTS

| <u>SECTION</u> | | <u>PAGE</u> |
|----------------|--|-------------|
| 1.0 | <u>SPACECRAFT SYSTEMS TESTING PLAN</u> | 1 |
| 1.1 | SCOPE | 1 |
| 1.1.1 | BACKGROUND | 1 |
| 1.2 | TEST PHILOSOPHY | 2 |
| 1.2.1 | GENERAL | 2 |
| 1.2.2 | SAFETY/MANNED TEST | 4 |
| 1.2.3 | TESTING GROUND RULES | 4A |
| 1.3 | SYSTEMS TEST ORGANIZATION | 7 |
| 1.4 | OPERATIONAL GROUND RULES FOR CONDUCT OF ACCEPTANCE TESTING | 11 |
| 1.5 | TRAINING OF TEST PERSONNEL | 11 |
| 1.6 | TEST MILESTONE AND SCHEDULES | 12 |
| 1.7 | ACTIVITIES FOLLOWING ACCEPTANCE OF SPACECRAFT TESTING | 12 |
| 2.0 | <u>SPACECRAFT SYSTEMS TEST OUTLINES (SST)</u> | 14A |
| 2.1 | INTRODUCTION | 18 |
| 2.2 | PRE-SST TEST OUTLINES | 22 |
| 2.3 | PHASE I TEST OUTLINES | 29 |
| 2.4 | PHASE II TEST OUTLINES | 61 |
| 2.5 | MISCELLANEOUS PROCEDURES | 107 |

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE ixREVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B

INDEX OF EFFECTIVE PAGES

The pages of this report currently in effect are listed below in numerical order. The letter or number listed after the page number identifies the latest revision affecting that page.

| PAGE NUMBER | REV. LTR. |
|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| TITLE | A | 34 | | 77 | A | | |
| 1 | A | 35 | A | 78 | A | | |
| 11 | A | 36 | | 79 | A | | |
| 111 | A | 37 | | 80 | | | |
| 1v | A | 38 | | 81 | A | | |
| v | A | 39 | | 82 | A | | |
| vi | A | 40 | | 83 | A | | |
| vii | A | 41 | A | 84 | A | | |
| viii | A | 42 | | 85 | | | |
| ix | A | 43 | A | 86 | | | |
| 1 | A | 44 | A | 87 | | | |
| 2 | A | 45 | | 88 | A | | |
| 3 | | 46 | A | 89 | A | | |
| 4 | A | 47 | | 90 | | | |
| 4A | A | 48 | | 91 | A | | |
| 5 | A | 49 | | 92 | A | | |
| 6 | A | 50 | | 93 | A | | |
| 7 | A | 51 | A | 94 | | | |
| 8 | | 52 | | 95 | A | | |
| 9 | | 53 | A | 96 | A | | |
| 10 | A | 54 | A | 97 | A | | |
| 11 | A | 55 | | 98 | A | | |
| 12 | | 56 | | 99 | A | | |
| 13 | A | 57 | | 100 | A | | |
| 14 | | 58 | | 101 | A | | |
| 14A | | 59 | | 102 | A | | |
| 15 | | 60 | A | 102A | A | | |
| 16 | | 60A | A | 103 | A | | |
| 17 | A | 61 | | 103A | A | | |
| 18 | A | 62 | | 104 | A | | |
| 19 | | 63 | A | 105 | A | | |
| 20 | | 64 | A | 106 | | | |
| 21 | A | 65 | | 107 | A | | |
| 22 | A | 66 | | 108 | | | |
| 23 | A | 67 | A | 109 | A | | |
| 24 | A | 68 | A | | | | |
| 25 | | 69 | | | | | |
| 26 | A | 70 | | | | | |
| 27 | | 71 | | | | | |
| 28 | | 72 | | | | | |
| 29 | | 73 | | | | | |
| 30 | A | 74 | A | | | | |
| 31 | | 75 | A | | | | |
| 32 | A | 76 | A | | | | |
| 33 | A | 76A | A | | | | |

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 1

REVISED 2 APRIL 1969

REPORT E217

REVISED _____

MODEL 195B

1.0 SPACECRAFT SYSTEMS TEST PLAN

1.1 SCOPE

THIS DOCUMENT OUTLINES THE TEST PLAN TO BE CONDUCTED ON GEMINI "B" SPACECRAFT AT THE MCDONNELL ST. LOUIS FACILITY PRIOR TO TENDERING THE SPACECRAFT TO THE U.S. AIR FORCE FOR ACCEPTANCE.

FROM THIS PLAN WILL EVOLVE THE DETAILED TEST PROCEDURES PREPARED IN ACCORDANCE WITH THE MASTER SCHEDULE WHICH DEPICTS VEHICLE FLOW. SPACECRAFT SYSTEMS TEST (SST) ENCOMPASS THOSE TESTS WHICH HAVE BEEN IDENTIFIED OR KNOWN AT VARIOUS TIMES AS FACTORY CHECKOUT, INTEGRATED OR COMBINED SYSTEM TESTS, MANUFACTURING ACCEPTANCE OR SPACECRAFT ACCEPTANCE TESTS. THESE TESTS ARE CONDUCTED DURING OR AFTER MANUFACTURING BUT PRIOR TO DELIVERY OF THE SPACECRAFT FROM THE MCDONNELL ST. LOUIS FACILITY.

THE TEST OUTLINES PRESENTED IN SECTION II ARE BASED ON A MANNED VEHICLE CONFIGURATION. SINCE MOST OF THE SYSTEM TESTS ARE EITHER THE SAME OR SLIGHTLY MODIFIED BETWEEN MANNED AND UNMANNED VEHICLES, ONLY THE MOST SIGNIFICANT TEST DIFFERENCES ARE IDENTIFIED (SIGNIFICANT IS DEFINED AS THOSE SYSTEMS AND COMPONENTS IDENTIFIED IN SECTION II). ANTICIPATED TEST FLOW FOR GEMINI "B" SPACECRAFT AVE #1 THROUGH #4 IS DEPICTED IN SECTION II, FIGURES 2-1 AND 2-2.

1.1.1 BACKGROUND

THE SST PLAN PROPOSED FOR GEMINI B SPACECRAFT IS ESSENTIALLY THE SAME SST PLAN THAT EVOLVED ON THE NASA GEMINI PROGRAM. THE TEST FLOW RESULTS IN A METHODOICAL BUILD-UP OF MODULES INTO A MATED SPACECRAFT AND FROM THEN ON, THE TEST FLOW IS GEARED TO THE NEED OF HAVING SYSTEMS READY FOR SIMULATED

DATE 31 MAY 1968PAGE 2REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B

1.1.1 BACKGROUND (CONTINUED)

FLIGHT TESTING. THE ALTITUDE CHAMBER TESTING IS SCHEDULED LAST IN ORDER TO HAVE MAXIMUM CONFIDENCE IN OVERALL SPACECRAFT SYSTEMS PRIOR TO PUTTING A MAN IN THE SPACECRAFT AT ALTITUDE.

1.2 TEST PHILOSOPHY

THE TOTAL SYSTEMS TEST CONCEPT COVERING THE TIME FROM MANUFACTURING COMPLETION THROUGH THE LAUNCH OF A SPACECRAFT HAS EVOLVED THROUGH TWO MANNED SPACECRAFT PROGRAMS: NASA MERCURY AND GEMINI. THE RESULTING EVOLUTION NOW PERMITS THE CARRYING OUT OF AN EFFICIENT STREAMLINED PROGRAM WHOSE UNDERLYING PHILOSOPHY IS THAT EACH SPACECRAFT IS ESSENTIALLY FLIGHT READY WHEN IT LEAVES THE MCDONNELL ST. LOUIS FACILITY.

1.2.1 GENERAL

TESTING OF COMPONENTS OR EQUIPMENT PRIOR TO INSTALLATION IN THE SPACECRAFT OR ITS MODULAR SECTIONS IS BASED ON THE GOVERNING PHILOSOPHY THAT THE SUPPLIER OR VENDOR CONDUCTS VALID AND COMPREHENSIVE TESTS IN ACCORDANCE WITH THE SPECIFICATION CONTROL DRAWING (SCD). HOWEVER, THERE ARE INSTANCES WHERE RE-TEST OF EQUIPMENT AT THE MCDONNELL FACILITY PRIOR TO INSTALLATION IS JUSTIFIED. THIS TESTING HAS BEEN IDENTIFIED AS EQUIPMENT FUNCTIONAL CHECKS (EFC). THE JUSTIFICATION FOR EFC IS BASED ON THE FOLLOWING CONSIDERATIONS.

- (A) SUFFICIENT HISTORICAL TEST DATA EXISTS THAT INDICATES A SUFFICIENT NUMBER OF DEFICIENCIES ARE BEING UNCOVERED BY VARIOUS TESTING PROGRAMS ON SPECIFIC PIECES OF EQUIPMENT THAT JUSTIFIES SPECIAL TESTING PRIOR TO INSTALLATION.

DATE 31 MAY 1968PAGE 3

REVISED _____

REPORT E217

REVISED _____

MODEL 195B**1.2.1 GENERAL (CONTINUED)**

- (B) BECAUSE CERTAIN EQUIPMENT IS NEW FOR THE GEMINI B PROGRAM, ADDITIONAL TESTING PRIOR TO INSTALLATION IS JUSTIFIED UNTIL SUFFICIENT TEST DATA IS AVAILABLE TO DETECT ANY TRENDS.
- (C) AN EVALUATION OF THE TRADE-OFF IN TERMS OF COST BETWEEN FINDING AND FIXING A DISCREPANT CONDITION AT THE MODULE LEVEL AS OPPOSED TO FINDING AND FIXING THIS CONDITION AFTER INSTALLATION, JUSTIFIES EFC ON THIS PIECE OF EQUIPMENT.
- (D) IT IS EQUIPMENT FABRICATED IN THE CONTRACTOR FACILITY AND EFC CONSTITUTES THE FINAL MANUFACTURING ACCEPTANCE TEST.
- (E) RE-VERIFICATION OF "SUSPECT" EQUIPMENT UNCOVERED DURING SYSTEM TESTS WILL BE BY MEANS OF EFC.

IT IS INTENDED, HOWEVER, TO PROVIDE THE CAPABILITY IN TERMS OF AGE AND TEST PROCEDURES TO CONDUCT EFC ON A RATHER EXTENSIVE LIST OF EQUIPMENT IN ORDER TO FACILITATE TROUBLESHOOTING AND TO PRECLUDE SCHEDULE DELAYS DUE TO CYCLING EQUIPMENT BACK TO THE VENDOR.

THE PROPOSED SST PLAN IS BASED UPON THE ASSUMPTION THAT A SPACECRAFT MODULE HAS COMPLETED MANUFACTURING WHEN SST IS BEGUN.

1.2.1 GENERAL (CONTINUED)

EXPERIENCE HAS SHOWN THAT COST AND SCHEDULE CONSIDERATIONS SOMETIMES DICTATE A LESSER POSITION IN THIS MATTER. CRITERIA GOVERNING ACCEPTANCE OF THESE MODULES INTO TEST (SST) ARE DISCUSSED IN OP-101.

1.2.2 SAFETY/MANNED TEST

THE SAFETY PHILOSOPHY TO BE IMPLEMENTED BY THE CONTRACTOR DURING THE MANNED ALTITUDE CHAMBER TEST PORTIONS OF ACCEPTANCE TESTING HAS BEEN DEVELOPED AND REFINED OVER A PERIOD OF YEARS AND THRU SEVERAL SUCCESSFUL PROGRAMS.

THIS PHILOSOPHY REQUIRES THAT THE NORMAL CORPORATE DEPARTMENTS CONCERNED WITH SAFETY IN MANNED TESTING PROVIDE SAFETY CRITERIA AND SUPPORT IN THE PREPARATION, REVIEW AND CONDUCT OF MANNED TESTING IN THE ALTITUDE CHAMBER. THE ACTIVITY OF THESE DEPARTMENTS WILL BE MONITORED BY THE PROJECT SAFETY MANAGER. IN ESSENCE THIS PHILOSOPHY REQUIRES THE FOLLOWING ACTIONS:

- (A) REVIEW OF ADEQUACY OF FACILITIES, EQUIPMENT AND TEST VEHICLE PRIOR TO TESTING.
- (B) TRAINED RESCUE, FIREFIGHTING AND TEST PERSONNEL.
- (C) PHYSICAL AND MENTAL CERTIFICATION OF TEST SUBJECTS BY MEDICAL PERSONNEL.
- (D) QUALIFIED MEDICAL PERSONNEL ON DUTY DURING MANNED TESTING.
- (E) INSTRUMENTATION OF TEST SUBJECTS TO MEASURE THEIR PHYSIOLOGICAL CONDITION.
- (F) DETAIL TEST AND CHECKOUT PROCEDURES. THESE PROCEDURES WILL COVER EMERGENCY CONDITIONS.

1.2.2 SAFETY/MANNED TEST (CONTINUED)

- (G) DRY RUNS PRIOR TO PUTTING MAN IN LOOP.
- (H) INCLUSION OF SAFETY OFFICER AND AEROSPACE MEDICAL OFFICER IN TEST TEAM.

1.2.3 TESTING GROUND RULES

THE FOLLOWING BASIC GROUND RULES HAVE BEEN UTILIZED IN THE PREPARATION OF THE SST PLAN:

- (A) CONTRACT END ITEM SPECIFICATIONS AND INTERFACE SPECIFICATIONS SHALL BE REVIEWED FOR TEST REQUIREMENTS IN ORDER TO ASSURE THAT AS A MINIMUM THESE REQUIREMENTS ARE VERIFIED.
- (B) DURING TEST SEQUENCES, CRITICAL PARAMETERS SHALL BE EVALUATED AGAINST PERFORMANCE SPECIFICATIONS THAT ARE REQUIRED TO PERFORM A SUCCESSFUL MISSION. ALL SPACECRAFT SYSTEMS SHALL DEMONSTRATE PERFORMANCE EQUAL TO OR ABOVE THE MINIMUM SPECIFICATION LEVEL IN ORDER TO BE CONSIDERED FLIGHT WORTHY. NO SUBSYSTEM OR SYSTEM ENCOUNTERING A MALFUNCTION SHALL BE CONSIDERED FLIGHT WORTHY UNTIL SAID MALFUNCTION IS CORRECTED OR SATISFACTORILY EXPLAINED AND ACCEPTED.
- (C) THE FUNCTIONAL TEST MUST NOT INTRODUCE INPUT, SWITCHING, PSEUDO OPERATION, LOADING, ETC., WHICH MAY COMPROMISE EQUIPMENT PERFORMANCE OR PREVIOUS TEST RESULTS. THE TESTS MUST NOT HAVE ANY ADVERSE EFFECTS ON THE SYSTEM WHICH WOULD DEGRADE FLIGHT PERFORMANCE.
- (D) FUNCTIONAL TESTS WILL BE PERFORMED AFTER THE EQUIPMENT IS IN FLIGHT READY CONFIGURATION *INSOFAR AS IS PRACTICAL) AND WILL BE APPROPRIATELY REVERIFIED IF THE EQUIPMENT OR

DATE 31 MAY 1968PAGE 5REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B**1.2.3 TESTING GROUND RULES (CONTINUED)****(D) (CONTINUED)**

OVERALL SPACECRAFT CONFIGURATION IS SUBSEQUENTLY CHANGED, MODIFIED, OR EXPANDED.

(E) DURING SIMULATED FLIGHT PHASES OF THE TEST PROGRAM, EACH SUBSYSTEM WILL BE SUBJECTED TO CONDITIONS AND OPERATIONS APPROXIMATING, INSOFAR AS PRACTICAL, ACTUAL FLIGHT PROCEDURES INCLUDING REPRESENTATIVE ABORT CONDITIONS.

(F) ALL EQUIPMENT INTERFACES MUST BE EXERCISED. EQUIPMENT REMOVAL FOR TEST PURPOSES SHALL BE HELD TO A MINIMUM.

(G) DUPLICATION OF TESTING SHALL BE MINIMIZED.

(H) EQUIPMENT OPERATING TIME FOR TEST PURPOSES SHALL BE MINIMIZED AND FOR LIFE LIMITED COMPONENTS WILL BE RECORDED.

(I) THE TEST COMPLEX, WITH ALL AGE REQUIRED, SHALL BE VALIDATED PRIOR TO MATING WITH THE SPACECRAFT. (NOTE 1)

NOTE (1) "TEST COMPLEX" REFERS TO THAT LOCATION IN THE CONTRACTOR'S PLANT WHERE ELECTRICAL AND MECHANICAL AGE ARE ASSOCIATED IN ONE AREA AND THROUGH A NETWORK OF CABLES, JUNCTION BOXES AND PATCHBOARDS ARE CONNECTED TO A SPACECRAFT TO EFFECT CHECKOUT.

(J) ALL TESTING SHALL BE CONDUCTED IN CONFORMANCE WITH WRITTEN TEST PROCEDURES. IN THE EVENT "TROUBLESHOOTING" IS REQUIRED, THE SYSTEMS ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING SPECIAL SET-UPS THAT MAY DEVIATE

DATE 31 MAY 1968REVISED 2 APRIL 1969

REVISED _____

PAGE 6REPORT E217MODEL 195B1.2.3 TESTING GROUND RULES (CONTINUED)

(J) (CONTINUED)

FROM THE WRITTEN PROCEDURE AND SHALL ALSO BE RESPONSIBLE FOR RETURNING THE TEST COMPLEX AND THE SPACECRAFT TO ITS ORIGINAL OR AN ACCEPTABLE CONDITION WHEN TROUBLE ISOLATION AND CORRECTIVE ACTION ARE COMPLETED. SPECIAL TEST SET-UPS AND PROCEDURES FOR "TROUBLESHOOTING" OPERATIONS SHALL BE DOCUMENTED.

(K) THE ACCEPTANCE TEST PROCEDURES (STDRS), AS A MINIMUM, SHALL PROVIDE FOR THE RECORDING OF DATA REQUIRED TO VERIFY TEST REQUIREMENTS ACQUIRED FROM PARAGRAPH (A). THE STDR'S SHALL IDENTIFY THE RECORDING TECHNIQUE (I.E., TRACES, DIGITAL DISPLAYS, ETC.).

(L) IF A VEHICLE COMPONENT IS TO BE MODIFIED, REPLACED AND/OR RETESTED AS A RESULT OF SPACECRAFT ACCEPTANCE TEAM ACTIVITIES, RE-TEST PLANS SHALL BE PREPARED AND SUBMITTED TO SPACECRAFT ACCEPTANCE TEAM FOR REVIEW AND APPROVAL.

1.3 SYSTEMS TEST ORGANIZATION

FIGURE 1-1 DEPICTS THE LINE ORGANIZATION FROM THE PRESIDENT TO THE MANAGER OF VEHICLE TESTS & OPERATIONS WHO HAS THE DIRECT RESPONSIBILITY FOR CHECKING-OUT AND CONDUCTING SYSTEMS TESTS ON SPACECRAFT PRIOR TO DELIVERY FROM ST. LOUIS. THIS GROUP IS KNOWN AS THE GROUND SYSTEMS OPERATIONS (GSO) GROUP.

FUNCTIONAL TEST ORGANIZATION DIAGRAM

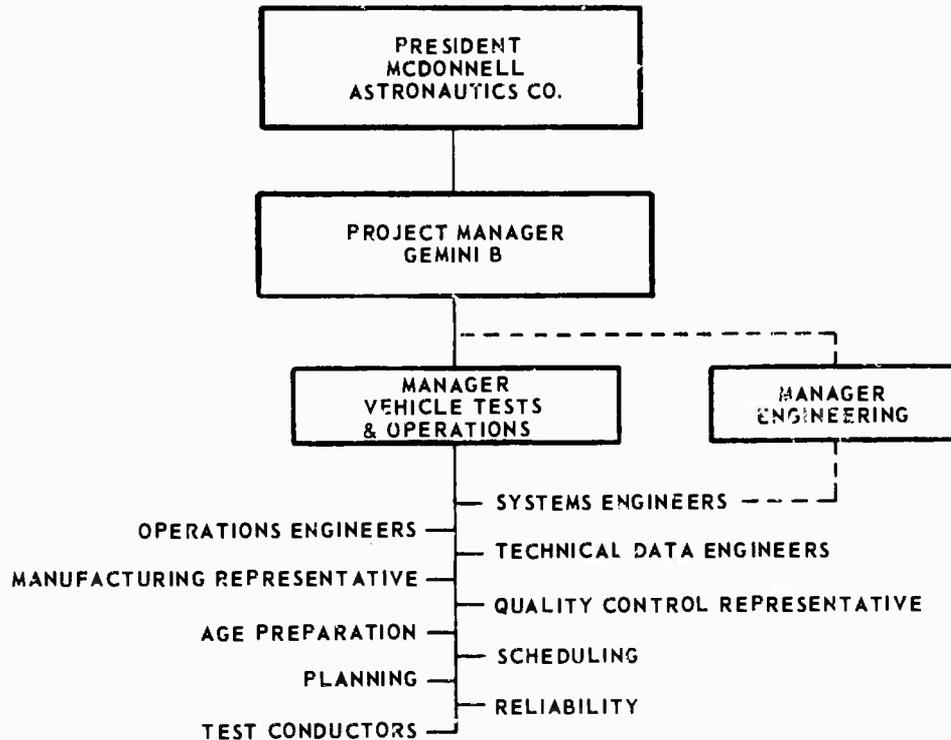


FIGURE 1-1

THE OPERATIONS GROUP (GSO) IS COMPOSED OF ELEMENTS OF THE DEPARTMENTS THAT PRODUCE THE SPACECRAFT. THE ORGANIZATIONAL STRUCTURE OF GSO IS GEARED TO CONTINUOUSLY EXPEDITE THE PROGRESS OF SPACECRAFT THROUGH SST. FOR HIGH RESPONSE TO ELIMINATING ANY DELAY THAT MAY BE ENCOUNTERED, AUTHORITY IS PRESENT WITHIN GSO TO PERFORM MOST COMPANY

1.3 SYSTEMS TEST ORGANIZATION (CONTINUED)

FUNCTIONS ON IMMEDIATE VEHICLES. ACCESS TO DEPARTMENTS IN THE DIVISION IS AFFORDED THE OPERATIONS GROUP FOR ACTION WHERE TIME PERMITS AND FORMAL PATHS FOR EXPERIENCE FEEDBACK ARE ARRANGED. A DESCRIPTION OF THE FUNCTIONS UNDER THE MANAGER OF OPERATIONS IS GIVEN BELOW.

- SYSTEMS ENGINEERS - ENGINEERING PERSONNEL WHO DEFINE SPACECRAFT TEST REQUIREMENTS, STAFF THE TEST TEAM, DEFINE ANOMALY INVESTIGATION, DISPOSITION NON-CONFORMITIES, AND SUPPORT AGE PREPARATION.
- OPERATIONS ENGINEERS - PERSONNEL RESPONSIBLE FOR CONTROLLING AND COORDINATING THE PLANNED ACTIVITY ON THE SPACECRAFT WHILE UNDER GSO CONTROL.
- TECHNICAL DATA ENGINEERS - SPECIALISTS IN WRITING DETAIL TEST PROCEDURES WHO WORK CLOSELY WITH THE SYSTEMS ENGINEERS.
- MANUFACTURING - PROVIDES REPRESENTATIVES TO THE OPERATIONS GROUP TO CONVEY SPACECRAFT STATUS TIME ESTIMATES TO ACCOMPLISH SPECIFIC TASKS, ESTABLISH AVAILABILITY OF SPACECRAFT EQUIPMENT AND SUPPORT TESTING.

1.3 SYSTEMS TEST ORGANIZATION (CONTINUED)

QUALITY CONTROL - PROVIDES REPRESENTATIVES TO THE OPERATIONS GROUP TO COORDINATE QUALITY CONTROL TASKS AND TO PROVIDE A RAPID RESPONSE TIE TO THEIR FUNCTIONAL DEPARTMENT.

AGE PREPARATION FUNCTION - PROVIDES REVIEW OF AGE ENGINEERING DOCUMENTATION AND COORDINATES THE MOST EFFICIENT TIME OF INCORPORATION. THEY PROMOTE EFFICIENT TIMING OF CALIBRATION AND MAINTENANCE EXERCISES TO ASSURE AVAILABILITY OF AGE FOR TESTING.

SCHEDULING FUNCTION - SUPPORTS THE OPERATIONS PLANNING TASK BY ESTIMATING MANHOURS REQUIRED TO ACCOMPLISH MANUFACTURING TASK AND PROVIDE FEEDBACK OF HOURS EXPENDED VERSUS HOURS PLANNED. THEY ARE THE FORMAL CONTACT TO THE FABRICATION AND ASSEMBLY FUNCTIONAL PLANNING GROUP AND THROUGH THIS ACCESS PROVIDE ADVANCE INFORMATION ON FORTHCOMING ENGINEERING CHANGES.

ADMINISTRATION AND PLANNING FUNCTION - PROVIDE ADMINISTRATIVE SUPPORT TO MONITOR MANPOWER, BUDGETS, ETC., AND THE REPORTING OF THESE ITEMS. IT PREPARES THE GSO WORK PLANS FOR EACH SPACECRAFT IN SST AND COORDINATES OTHER DIVISIONS SUPPORT.

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 10

REVISED 2 APRIL 1969

REPORT E217

REVISED _____

MODEL 195B

1.3 SYSTEMS TEST ORGANIZATION (CONTINUED)

RELIABILITY FUNCTION - PROVIDE PERSONNEL THAT FOLLOW TESTING AND ASSURE PROPER DOCUMENTATION OF MALFUNCTIONS AND PROVIDE INFORMATION TO THE RELIABILITY DEPARTMENT TO SUPPORT RELIABILITY ANALYSIS.

TEST CONDUCTORS - RESPONSIBLE ENGINEERS WHO DIRECT AND CONTROL THE ACTUAL TESTING ON THE SPACECRAFT AND CONSTITUTE THE CENTRAL AUTHORITY THROUGH WHICH ALL ACTIVITY MUST BE COORDINATED WHEN A SPACECRAFT IS IN A TEST PERIOD.

VEHICLE TESTS & OPERATIONS MANAGER AN EXPERIENCED TEST MANAGER WHO IS RESPONSIBLE FOR THE TOTAL ACCEPTANCE TEST EFFORT. HE IS RESPONSIBLE TO THE PROGRAM MANAGER FOR ACCEPTABLE TEST ACTIVITIES. HE WILL ALSO PROVIDE THE NECESSARY COORDINATION BETWEEN THE ACCEPTANCE TEST AREA AND THE LAUNCH SITE.

1.4 OPERATIONAL GROUND RULES FOR CONDUCT OF ACCEPTANCE TESTING

CONDUCT OF ACCEPTANCE TEST SHALL BE AS DEFINED IN SASFL 22015.
THE WORKING RELATIONSHIP BETWEEN THE LOCAL GOVERNMENT REPRESENTATIVE

DATE 31 MAY 1968PAGE 11REVISED 2 APRIL 1969REPORT E217

REVISED _____

MOOEL 195B

1.4 OPERATIONAL GROUND RULES FOR CONDUCT OF ACCEPTANCE TESTING
(CONTINUED)

SENTATIVE AND MDAC-ED DURING ACCEPTANCE TESTING SHALL BE
AS DEFINED IN OP-101.

1.5 TRAINING OF TEST PERSONNEL

TRAINING OF THE TEST PERSONNEL IS ESSENTIALLY ACCOMPLISHED ON THE
JOB AND COVERS MANY PHASES ENCOMPASSING LONG PERIODS OF TIME.
BEFORE A MAN REACHES THE POINT WHEREBY HE MAY BE CONSIDERED A
TRAINED TEST ENGINEER, HE WILL HAVE HAD SOME OF THE FOLLOWING
EXPERIENCES:

- (A) EXPERIENCE IN WORKING ON THE DETAIL DESIGN OF THE SPACECRAFT,
ITS SYSTEMS AND AGE.
- (B) EXPERIENCE GAINED BY WORKING ON THE DEVELOPMENT AND QUALIFI-
CATION TESTING OF THE VARIOUS COMPONENTS AND SYSTEMS OF THE
SPACECRAFT.
- (C) EXPERIENCE GAINED BY BEING A TEST ENGINEER ON PREVIOUS OR
SIMILAR PROGRAMS.
- (D) EXPERIENCE GAINED BY REVIEWING AND APPROVING THE TEST PROCEDURES.
- (E) EXPERIENCE GAINED BY CONDUCTING, OR SUPPORTING EQUIPMENT
TESTING PRIOR TO ITS INSTALLATION IN SPACECRAFT. THE SIMILARITY
BETWEEN THE GEMINI B AND THE NASA GEMINI PROGRAMS PROVIDES A
TRAINED NUCLEUS OF TEST PERSONNEL FROM THE NASA GEMINI PROGRAM
WHICH IS AVAILABLE FOR GEMINI B.

DATE 31 MAY 1968

REVISED _____

REVISED _____

PAGE 12REPORT E217MODEL 195B

1.6 TEST MILESTONE AND SCHEDULES

THE TEST MILESTONES AND THE ANTICIPATED SPACECRAFT SCHEDULES ARE DEPICTED ON FIGURES 1-2 AND 1-3. FIGURE 1-2 PRESENTS A SERIES OF MILESTONES THAT ARE REPRESENTATIVE OF THE MILESTONE FOR EACH SPACECRAFT TEST. FIGURE 1-3 SHOWS THE TEST SCHEDULE RELATIONSHIP OF EACH SPACECRAFT WHILE IN SPACECRAFT SYSTEMS TEST.

1.7 ACTIVITIES FOLLOWING ACCEPTANCE OF SPACECRAFT TESTING

THE CONTRACTOR AND THE CUSTOMERS REPRESENTATIVES SHALL WORK TOGETHER ON THE ACTIVITIES THAT TAKE PLACE FOLLOWING THE COMPLETION OF SPACECRAFT ACCEPTANCE TESTING. SOME OF THE ACTIVITIES THAT TAKE PLACE ARE AS FOLLOWS:

- (A) START PREPARATION FOR SHIPMENT.
- (B) CLEAN-UP SPACECRAFT DISCREPANCIES REPORTS.
- (C) CLEAN-UP OPEN PLANNING.
- (D) RETEST INDIVIDUAL COMPONENTS (AS REQUIRED).

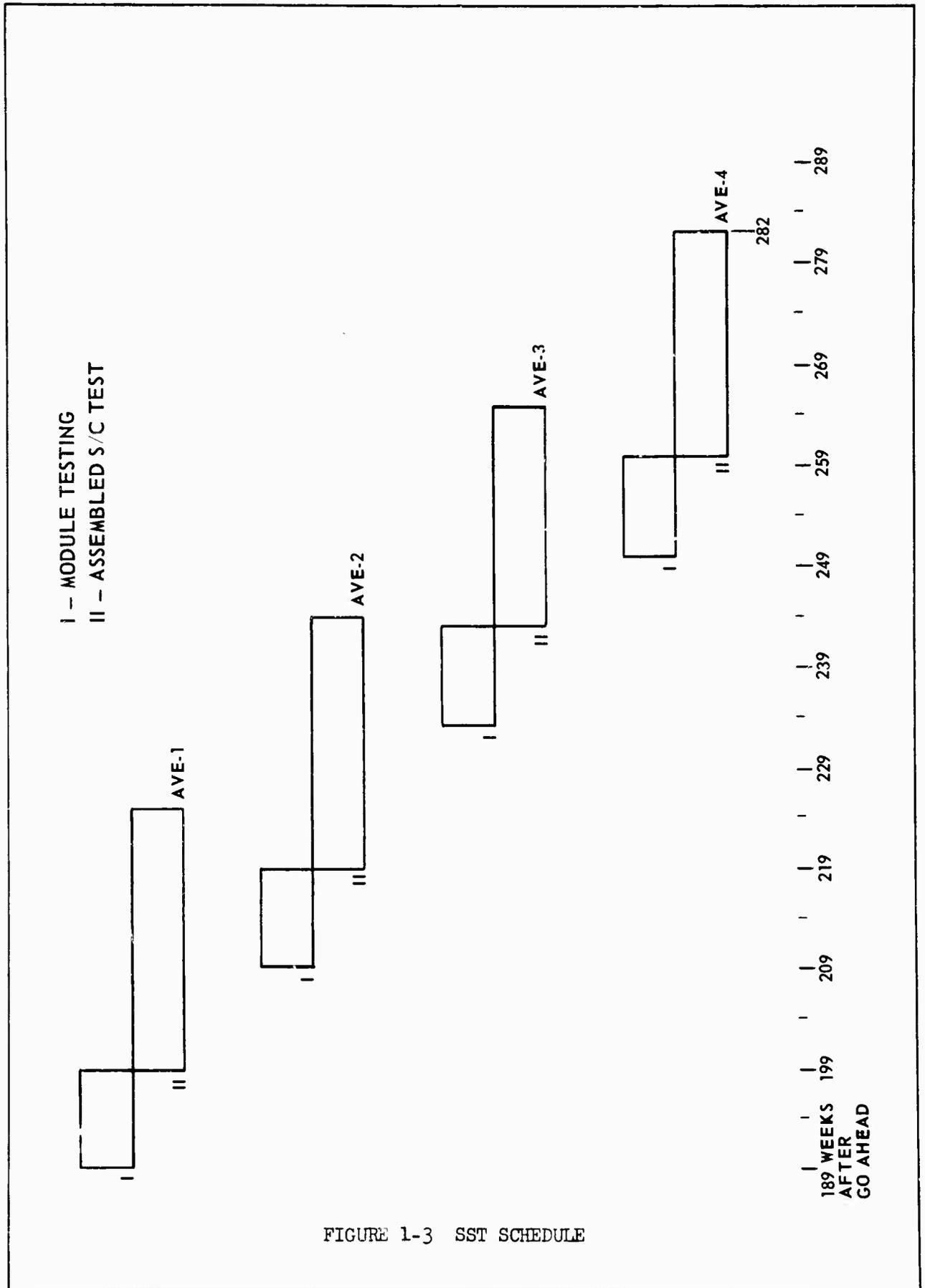


FIGURE 1-3 SST SCHEDULE

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968

REVISED _____

REVISED _____

PAGE 14A

REPORT E217

MODEL 195B

SECTION II
SPACECRAFT SYSTEM TEST (SST)

TABLE OF CONTENTS

| <u>SECTION</u> | <u>PAGE</u> |
|---|-------------|
| 2.0 <u>SPACECRAFT SYSTEMS TEST OUTLINES (SST)</u> | 18 |
| 2.1 <u>INTRODUCTION</u> | 18 |
| 2.1.1 <u>STDR NUMBERING SYSTEM</u> | 19 |
| 2.1.2 <u>ANTICIPATED TEST FLOW DIAGRAMS</u> | 20 |
| FIGURE 2-1 AVE 1 (GBQ #1 UNMANNED) | 20 |
| FIGURE 2-2 AVE 2 THRU 4 (MANNED) | 21 |
| 2.2 <u>PRE-SPACECRAFT SYSTEMS TESTS</u> | 22 |
| 2.2.1 <u>TEST PHILOSOPHY</u> | 22 |
| 2.2.2 <u>RE-ENTRY CONTROL SYSTEM TEST (RCS) -</u> <u>STDR B3-B82</u> | 22 |
| 2.2.3 <u>ENVIRONMENTAL CONTROL AND COOLANT SYSTEMS TEST</u> <u>- STDR B3-C72</u> | 24 |
| 2.2.4 <u>ADAPTER ECS AND COOLANT SYSTEMS TEST -</u> <u>STDR B3-D72</u> | 25 |
| 2.2.5 <u>COOLANT PUMP MODULE TEST - STDR B3-E62</u> | 27 |
| 2.3 <u>PHASE I TESTING</u> | 29 |
| 2.3.1 <u>TEST PHILOSOPHY</u> | 29 |
| 2.3.2 <u>PALLETS TESTS (UNMANNED VEHICLE)</u> | 30 |
| 2.3.2.1 <u>PALLET (L/H & R/H) INSTRUMENTATION</u> <u>TESTS - STDR B3-E22</u> | 30 |
| 2.3.3 <u>RECOVERY SECTION</u> | 32 |
| 2.3.3.1 <u>SEQUENTIAL SYSTEM TEST - STDR B3-A31</u> | 32 |
| 2.3.3.2 <u>ANTIENNA AND COAXIAL SYSTEM TEST -</u> <u>STDR B3-E42</u> | 33 |
| 2.3.4 <u>RE-ENTRY CONTROL SECTION</u> | 34 |

TABLE OF CONTENTS (CONTINUED)

| <u>SECTION</u> | <u>PAGE</u> |
|--|-------------|
| 2.3 (CONTINUED) | |
| 2.3.4.1 ANTENNA AND COAXIAL SYSTEM TEST - STDR B3-E42 | 34 |
| 2.3.4.2 RCS VALIDATION AND FUNCTIONAL TEST - STDR B3-B81 | 35 |
| 2.3.5 ADAPTER SECTION | 38 |
| 2.3.5.1 COOLANT SYSTEM PUMP MODULE TEST - STDR B3-E61 | 38 |
| 2.3.5.2 ECS MODULE TEST - STDR B3-E72 | 41 |
| 2.3.5.3 ADAPTER SECTION WEIGHT AND BALANCE - STDR B3-D202 | 44 |
| 2.3.5.4 RETOROCKET & PACS ALIGNMENT - STDR B3-D200 | 45 |
| 2.3.6 CABIN SECTION | 46 |
| 2.3.6.1 ENVIRONMENTAL CONTROL SYSTEM (ECS) SUIT MODULE TEST - STDR B3-E71 | 46 |
| 2.3.6.2 ANTENNA AND COAXIAL SYSTEM TEST - STDR B3-E42 | 48 |
| 2.3.6.3 CABIN SECTION ELECTRICAL SYSTEMS TEST - STDR B3-C11 | 50 |
| 2.3.6.4 ENVIRONMENTAL CONTROL SYSTEM TEST - STDR B3-C71 | 57 |
| 2.3.6.5 SEATS ASTRONAUTS WEIGHT AND BALANCE - STDR B3-E202 | 58 |
| 2.3.7 RE-ENTRY MODULE | 59 |
| 2.3.7.1 RE-ENTRY MODULE WEIGHT AND BALANCE - STDR B3-G202 | 59 |
| 2.4 <u>PHASE II TESTING (ASSEMBLED SPACECRAFT)</u> | 61 |
| 2.4.1 TEST PHILOSOPHY | 61 |

TABLE OF CONTENTS (CONTINUED)

| <u>SECTION</u> | <u>PAGE</u> |
|--|-------------|
| 2.4 (CONTINUED) | |
| 2.4.2 ANTENNA AND COAXIAL SYSTEM TEST - STDR B3-E42 . . . | 61 |
| 2.4.3 COOLANT SYSTEM LEAK AND FUNCTIONAL TEST - STDR B3-H61 | 63 |
| 2.4.4 ECS VALIDATION TEST - STDR B3-H71 | 64 |
| 2.4.5 PYROTECHNIC ELECTRICAL CHECK - STDR B3-H12 . . . | 68 |
| 2.4.6 SYSTEMS ASSURANCE TESTS - STDR B3-H90 | 69 |
| 2.4.7 SIMULATED FLIGHT TEST - STDR B3-H91 | 83 |
| 2.4.7.1 SIMULATED FLIGHT TEST PART I (GBQ #1 ONLY) | 89 |
| 2.4.7.2 SIMULATED FLIGHT TEST PART II | 91 |
| 2.4.8 GUIDANCE AND CONTROL (G & C) PHASING TEST - STDR B3-H52 | 93 |
| 2.4.9 ALTITUDE CHAMBER TEST - STDR B3-H93 | 95 |
| 2.4.10 VIBRATION TEST (GBQ #1 ONLY) - STDR B3-H92 . . . | 102A |
| 2.5 <u>MISCELLANEOUS TEST OUTLINES</u> | 107 |
| 2.5.1 SPACECRAFT MATING AND DEMATING - STDR B3-E204 . . | 107 |
| 2.5.2 PREPARATION FOR SHIPMENT - STDR B3-H208 | 107 |
| 2.5.3 SPACECRAFT HANDLING PROCEDURES - STDR B3-E203 . . | 107 |
| 2.5.4 SPACECRAFT RIGGING AND ALIGNMENT - STDR B3-E201 . | 108 |
| 2.5.5 SPACECRAFT TEST POINT LIST - STDR B3-1 | 108 |
| 2.5.6 SPACECRAFT CABLING HOOK-UP BY STDR USAGE - STDR B3-H205 | 109 |
| 2.5.7 COMPLEX VALIDATION - STDR B5-3 | 109 |
| 2.5.8 COMPLEX VALIDATION (G & C SIMULATOR) - STDR B5-4 | 109 |
| 2.5.9 SPACECRAFT SERVICING - STDR B3-E206 | 109 |
| 2.5.10 SPACECRAFT ALIGNMENT - STDR B3-H200 | 109 |

DATE 31 MAY 1968REVISED 2 APRIL 1969

REVISED _____

PAGE 18REPORT E217MODEL 195B

2.0 SPACECRAFT SYSTEMS TEST OUTLINES (SST)

2.1 INTRODUCTION

THE TESTS IDENTIFIED IN THIS SECTION ARE CONDUCTED PRIOR TO DELIVERY OF THE SPACECRAFT FROM THE MCDONNELL ST. LOUIS FACILITY. THE LEVEL OF INFORMATION PRESENTED IS FOR PLANNING PURPOSES ONLY. FROM THESE OUTLINES, DETAILED TEST PROCEDURES WILL BE PREPARED.

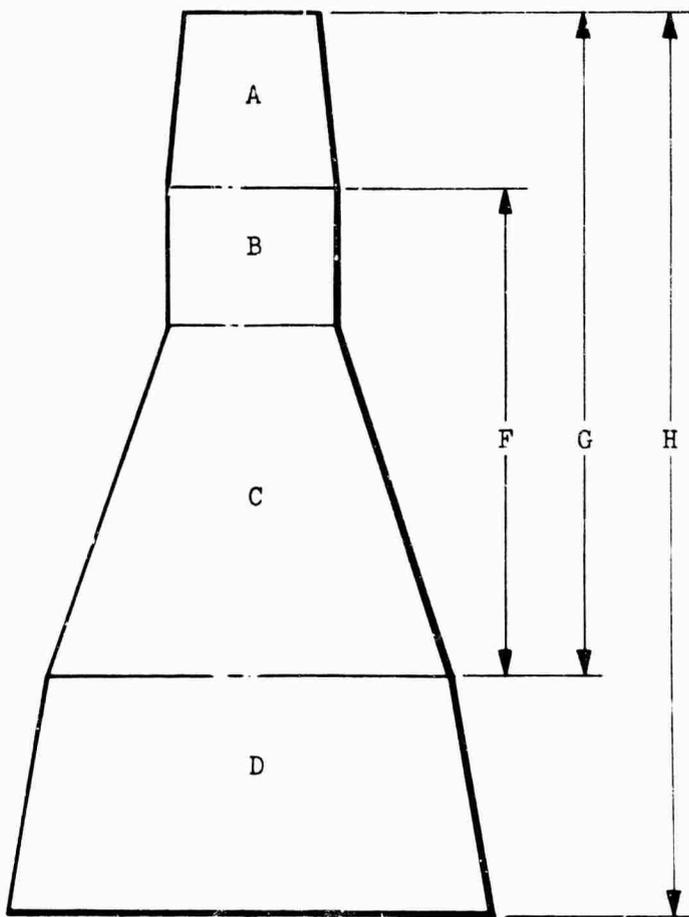
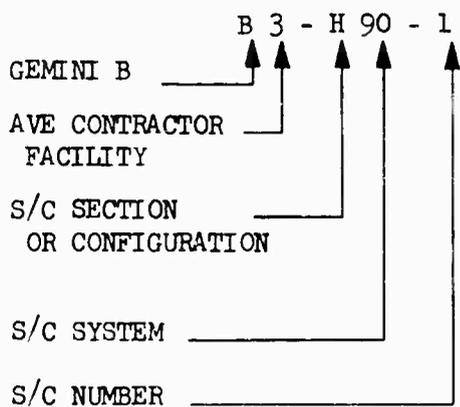
TEST OBJECTIVES, SPACECRAFT CONFIGURATION AND TEST OUTLINES ARE PROVIDED FOR THE PROPOSED TESTS. THE TEST FLOW OR SEQUENCE IS THE PRESENTLY KNOWN PLAN AND IS SUBJECT TO CHANGE AS THE DETAIL TEST PLANS ARE FORMULATED. TEST CONFIGURATION OF THE TEST FACILITIES AND THE ARTICLE UNDER ACCEPTANCE TEST SHALL BE STRICTLY CONTROLLED AT ALL TIMES. THE ARTICLE UNDER TEST SHALL REMAIN IN THE CONFIGURATION AT THE COMPLETION OF THE TEST UNTIL NAVPLANTREPO APPROVAL HAS BEEN GIVEN TO PROCEED TO THE NEXT PLANNED ACTIVITY.

THE ANTICIPATED REPRESENTATIVE TEST FLOW FOR THE GEMINI B FLIGHT CONFIGURATIONS (GBQ AND MANNED) ARE DEPICTED ON FIGURES 2-1 AND 2-2. THE DIFFERENCES BETWEEN THE GBQ AND MANNED TEST FLOWS IS BECAUSE OF THE REQUIREMENT TO PERFORM A VIBRATION TEST ON GBQ. THE DIFFERENCES IN THE TEST FLOWS OCCUR AFTER SYSTEM ASSURANCE TESTING. THE FLOW IS ARRANGED TO ALLOW AN ABBREVIATED SYSTEM ASSURANCE TEST DURING SIMULATED FLIGHT FOLLOWING THE VIBRATION TEST WITH A MINIMUM NUMBER OF MOVES BETWEEN TEST FACILITIES. THIS TEST SEQUENCE AND THE TEST OUTLINES DESCRIBED LATER REPRESENT CURRENT PLANNING AND ARE SUBJECT TO CHANGE WHEN THE ACTUAL PLAN IS EXECUTED. THIS FLEXIBILITY MUST BE PRESENT IN ANY TEST PLAN TO FACILITATE ITS EXPEDIENT EXECUTION WHILE AT THE SAME TIME MEETING BOTH THE INDIVIDUAL TEST AND THE OVERALL PROGRAM OBJECTIVES. CHANGES TO THE APPROVED TEST FLOW SHALL BE CONTROLLED IN ACCORDANCE WITH OP-101.

2.1.1 STDR NUMBERING SYSTEM

THE DIAGRAM SHOWN BELOW IS PROVIDED AS AN AID IN UNDERSTANDING THE STDR NUMBERING SYSTEM.

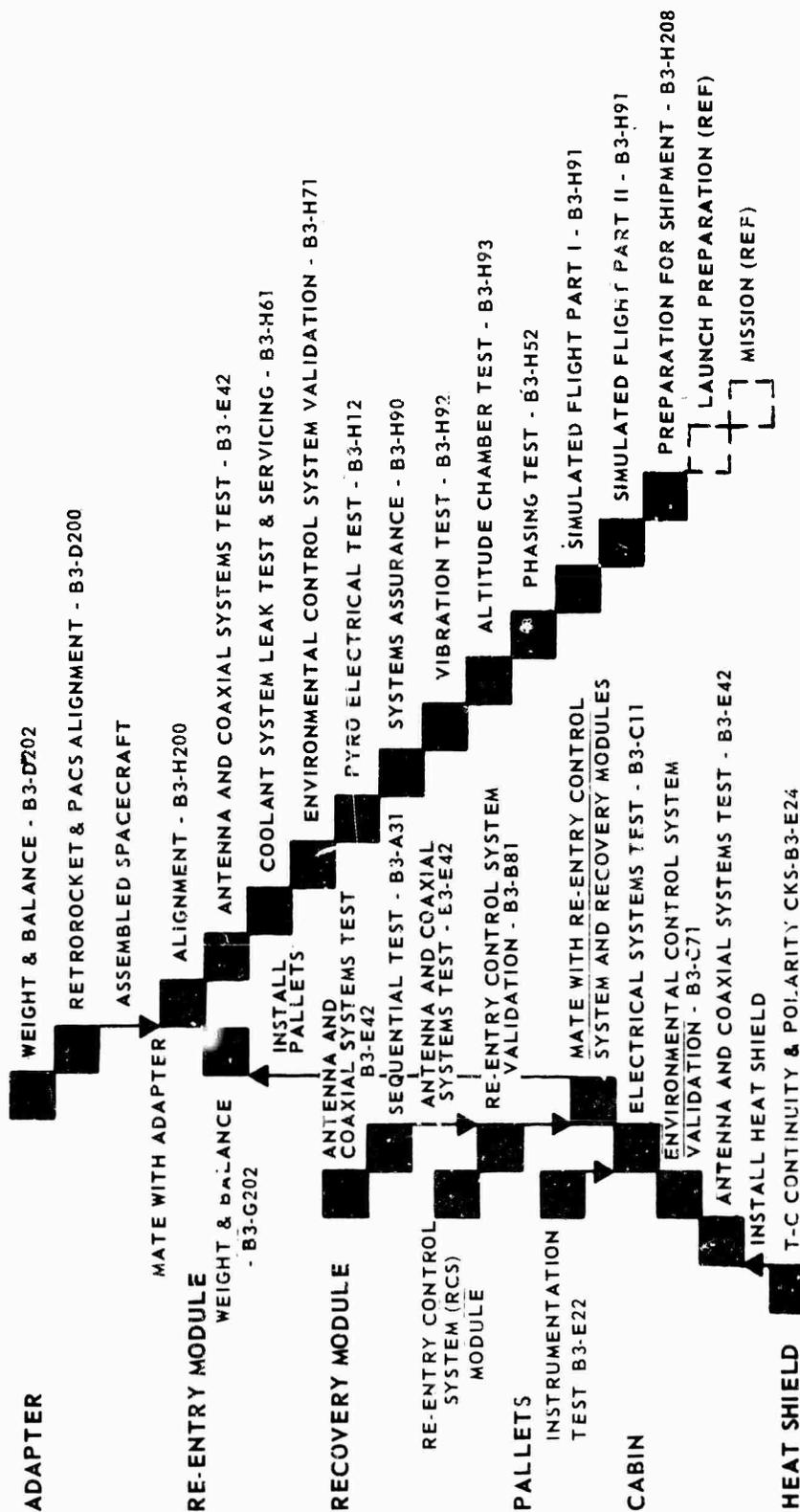
EXAMPLE:



- A. RECOVERY SECTION
- B. RCS SECTION
- C. CABIN SECTION
- D. ADAPTER SECTION
- E. SPECIAL TEST

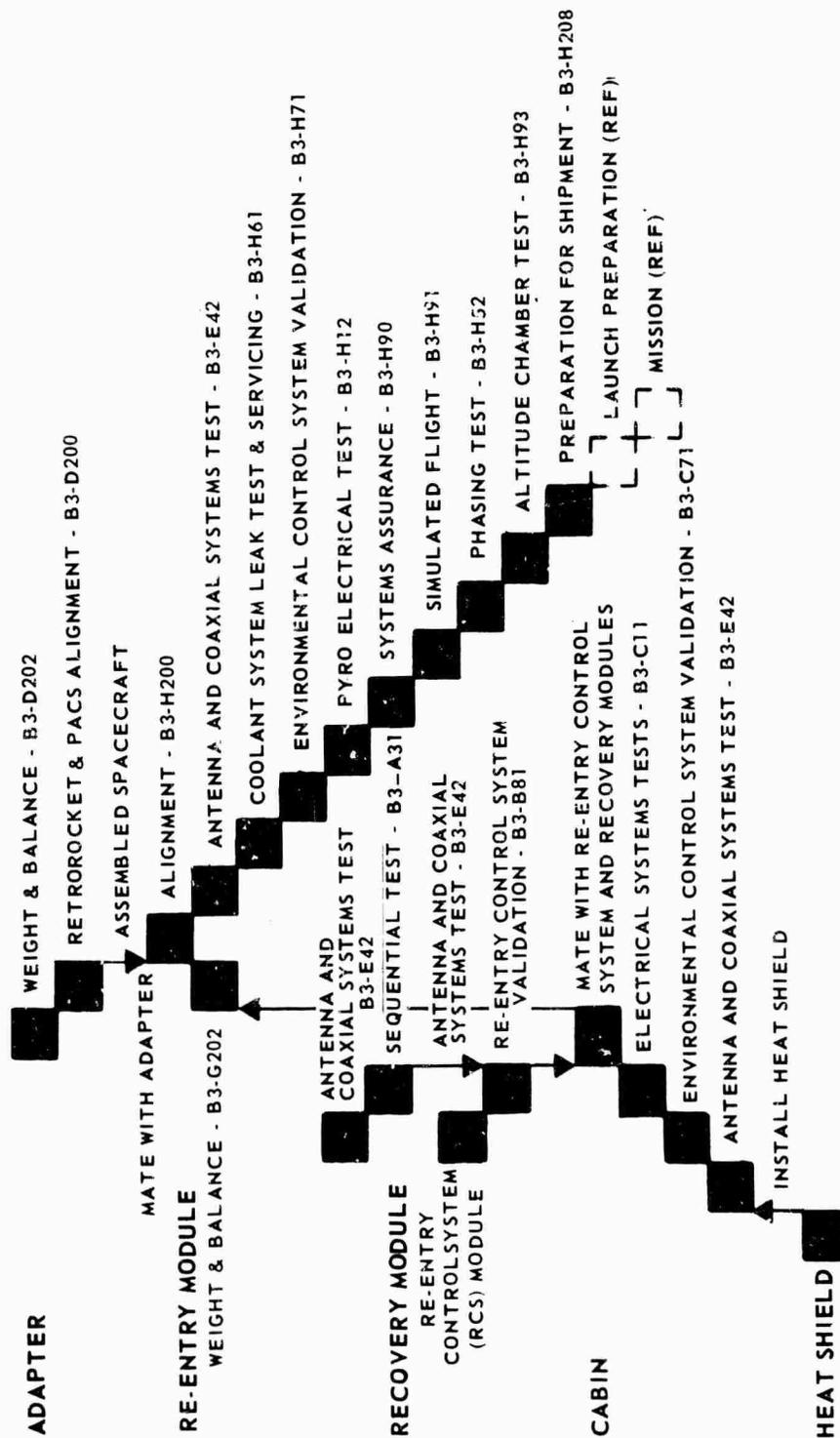
- F. LANDING CONFIGURATION
- G. RE-ENTRY CONFIGURATION
- H. OVERALL SPACECRAFT

ANTICIPATED TEST FLOW DIAGRAM
(SPACECRAFT SYSTEMS TEST)
AEROSPACE VEHICLE EQUIPMENT 1 (GBQ UNMANNED)



2.1.2 FIGURE 2-1 ANTICIPATED TEST FLOW DIAGRAM SST AVE 1 GBQ 1 UNMANNED

ANTICIPATED TEST FLOW DIAGRAM
 (SPACECRAFT SYSTEMS TEST)
 AEROSPACE VEHICLE EQUIPMENT 2-4 (MANNED)



NOTE: ON AVE #2 A PALLET TEST WILL BE PERFORMED TO SUPPORT READY CONVERSION

2.1.2 FIGURE 2-2 ANTICIPATED TEST FLOW DIAGRAM SST AVE 2-4 MANNED

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 22REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B

2.2 PRE-SPACECRAFT SYSTEMS TESTS

2.2.1 TEST PHILOSOPHY

PRE-SPACECRAFT SYSTEMS TEST (PRE-SST) ARE THOSE TESTS WHICH ARE CONDUCTED BY MANUFACTURING DURING THE FINAL MANUFACTURING BUY-OFF TESTS. THESE TESTS ARE CONDUCTED IN ACCORDANCE WITH GROUND SYSTEMS OPERATIONS (GSO) PREPARED PROCEDURES (STDR'S) AND MAY BE MONITORED BY GSO PERSONNEL. THE PRIME PURPOSE OF THESE TESTS IS TO ASSURE STATIC INTEGRITY OF THE FLUID AND GAS SYSTEMS (INCLUDING S/C CABIN LEAKAGE AND PROOF TESTS) PRIOR TO THE S/C ENTERING SST. ALTHOUGH THESE PRE-SST TESTS ARE NOT NORMALLY CONSIDERED A PART OF ACCEPTANCE TESTING, THEY ARE PRESENTED HERE TO PROVIDE A BASIS AND CONTINUITY FOR THE TEST ACTIVITY CARRIED OUT DURING SST.

2.2.2 RE-ENTRY CONTROL SYSTEM TEST (RCS) - STDR B3-B82

(A) TEST OBJECTIVES

THIS TEST WILL CONSIST OF A PROOF AND LEAK TEST OF BRAZED JOINTS IN THE RCS SECTION.

(B) SYSTEMS SERVICED

THE RCS SYSTEM FROM THE PRESSURANT TANK TO REGULATOR INLET SHALL BE PRESSURIZED TO 4500 PSIG FOR HIGH PRESSURE PROOF TEST. THE REGULATOR OUTLET TO THE THRUST CHAMBERS WILL BE PRESSURIZED TO 450 PSIG FOR LOW PRESSURE PROOF TEST. LEAKAGE TESTS UTILIZING HELIUM MASS SPECTROMETER WILL BE PERFORMED AT 3000 PSIG FOR THE HIGH PRESSURE PORTION OF THE SYSTEM AND AT 300 PSIG FOR THE LOW PRESSURE PORTION OF THE SYSTEM.

2.2.2 RE-ENTRY CONTROL SYSTEM TEST (RCS) - STDR B3-B82 (CONTINUED)**(C) LOCATION AND CONFIGURATION**

THE RCS SECTION SHALL BE MOUNTED ON THE RCS SECTION HANDLING DOLLY IN THE WHITE ROOM (PROOF PRESSURE CAGE).

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| PIF52-00001-595 | PRESSURE TEST FIXTURE |
| PTE52-52000-501-5 | RESTRICTOR FITTING (2 REQ'D) |
| PTE52-52000-501 | MANIFOLD |
| PTE52-52000A-500 | DYNATURE ADAPTER (2 REQ'D) |
| PTE52-52000-503 | TEST BOX |
| ST52-52000-521 | SAFETY PROOF PRESSURE CAGE |
| PTE52E010080-1 | TCA DUST COVER (MODIFIED) (8 REQ'D) |
| CEC24-120A | HELIUM LEAK DETECTOR |
| N/A | FILTER (10 MICRON ABSOLUTE) (5 REQ'D) |
| 52E440033 | TEMP. HARNESS ASSY. |
| 52E440044 | TEMP. MONITOR SYSTEM |

(E) TEST OUTLINE

- (1) "A" RING PRESSURANT SYSTEM TEST (A, B, C, D, PACKAGE, REGULATOR AND PROPELLANT TANKS)
- (2) "A" RING PRESSURANT TANK TEST
- (3) "A" RING FUEL MANIFOLD TEST
- (4) "A" RING OXIDIZER MANIFOLD TEST
- (5) PRESSURANT (OXIDIZER) OVERBOARD VENT LINE TEST
- (6) PRESSURANT (FUEL) OVERBOARD VENT LINE TEST
- (7) "B" RING PRESSURANT SYSTEM TEST (A, B, C, D, PACKAGE, REGULATOR AND PROPELLANT TANKS)

DATE 31 MAY 1968PAGE 24REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195F2.2.2 RE-ENTRY CONTROL SYSTEM TEST (RCS) - STDR B3-B82 (CONTINUED)

(E) TEST OUTLINE (CONTINUED)

- (8) "B" RING PRESSURANT TANK TEST
- (9) "B" RING FUEL MANIFOLD TEST
- (10) "B" RING OXIDIZER MANIFOLD TEST

2.2.3 CABIN - ENVIRONMENTAL CONTROL AND COOLANT SYSTEMS TEST - STDR B3-C72

(A) TEST OBJECTIVES

THIS TEST WILL CONSIST OF CABIN WATER SYSTEM LINES LEAK TEST PRIOR TO INSTALLATION OF ECS SUIT MODULE, CABIN COOLANT SYSTEM LEAK CHECK, STATIC SYSTEM LINES LEAK TEST AND LOW PRESSURE OXYGEN SYSTEM LEAK TEST. THE SYSTEMS WILL BE PRESSURIZED WITH GN₂ AND BUBBLE CHECKED TO LOCATE LEAKS.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE CABIN SECTION WILL BE MOUNTED ON THE RE-ENTRY MODULE HANDLING DOLLY IN THE CLASS 6 WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| PTF52-00001-595 | PRESSURE TEST FIXTURE |
| PTF245-00001-501 | PRESSURE TEST FIXTURE |
| PTE52-52000-501 | MANIFOLD |
| MODEL WA33A-6 | GAGE (MARTIN-DECKER, 0.1 INCREMENTS) |
| 52-83708-81 | QUICK DISCONNECT (SUIT COMP. PRESSURE) |

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 25

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.2.3 CABIN - ENVIRONMENTAL CONTROL AND COOLANT SYSTEMS TEST -
STDR B3-C72 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|----------------------|---|
| N/A | ABSOLUTE FILTER (10 MICRON OR LESS) (2 REQ'D) |
| R25800CC-4-XXXX | HOSE ASSEMBLIES (3 REQ'D) |
| N/A | SAFETY SHIELD AND TIEDOWNS |
| STANDARD "K" SIZE | NITROGEN BOTTLES (GN ₂ PER MIL-P-27401B) |
| 52E360213-45 OR -545 | ADAPTER |
| 52E360213-29 OR -529 | PLUGS (3 REQ'D) |
| AN808-4D-505 | PLUGS (2 REQ'D) |
| AN919-5-4D-505 | REDUCER |
| AN919-8-4D-505 | REDUCER |
| AN929-4C-505 | CAPS (2 REQ'D) |
| PTE52-0001-511 | WATER MANOMETER |
| TYPE CG, WINTON | SHERLOCK LEAK DETECTOR SOLUTION |

(E) TEST OUTLINE

- (1) CABIN WATER SYSTEM LINES - LEAK TEST
- (2) CABIN PROOF PRESSURE, LEAK AND RELIEF VALVE FUNCTIONAL
- (3) CABIN COOLANT SYSTEM LEAK CHECK
- (4) STATIC SYSTEM LINES LEAK TEST (INSTRUMENTS NOT INSTALLED)
- (5) LOW PRESSURE OXYGEN SYSTEM LEAK TEST

2.2.4 ADAPTER ECS AND COOLANT SYSTEMS TEST - STDR B3-D72

(A) TEST OBJECTIVES

THIS TEST WILL CONSIST OF ADAPTER ECS GAS, WATER AND COOLANT SYSTEMS LEAK CHECK OF THE LINES LOCATED IN THE

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 26

REVISED 2 APRIL 1969

REP'DRT E217

REVISED _____

MODEL 195B

2.2.4 ADAPTER ECS AND COOLANT SYSTEMS TEST - STDR B3-D72 (CONTINUED)

(A) (CONTINUED)

ADAPTER PRIOR TO INSTALLATION OF THE COOLANT PUMP MODULE.
THE SYSTEMS WILL BE PRESSURIZED WITH GN₂ AND BUBBLE
CHECKED TO LOCATE LEAKS.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE ADAPTER SECTION WILL BE MOUNTED ON THE HANDLING
DOLLY IN THE CLASS 6 WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|----------------------|--|
| PTF52-00001-595 | PRESSURE TEST FIXTURE |
| PTF245-00001-501 | PRESSURE TEST FIXTURE |
| PTE52-52000-501 | MANIFOLD |
| MODEL WA33A-6 | GAGE (MARTIN-DECKER, 1.0 INCREMENTS) |
| N/A | FILTER (10 MICRON ABSOLUTE OR LESS) (2 REQ'D) |
| R25800CC-4-XXXX | HOSE ASSEMBLIES (3 REQ'D) |
| N/A | SAFETY SHIELD AND TIEDOWNS |
| STANDARD "K" SIZE | NITROGEN BOTTLES (GN ₂ PER MIL-P-27401B) |
| 52E360213-45 OR -545 | ADAPTER |
| 52E360213-29 OR -529 | PLUGS (3 REQ'D) |
| AN806-4D-505 | PLUGS (2 REQ'D) |
| AN919-5-4D-505 | REDUCER |
| AN919-8-4D-505 | REDUCER |

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 27

REVISED _____

REPORT E217

REVISED _____

MODEL 195B**2.2.4 ADAPTER ECS AND COOLANT SYSTEMS TEST - STDR B3-D72 (CONTINUED)****(D) AGE REQUIRED (CONTINUED)**

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|---------------------------------|
| AN929-4C-505 | CAPS (2 REQ'D) |
| PTE52-000G1-511 | WATER MANOMETER |
| TYPE CG, WINTON | SHERLOCK LEAK DETECTOR SOLUTION |

(E) TEST OUTLINE

- (1) COOLANT SYSTEM LINES - LEAK TEST
- (2) PRIMARY O₂ DISTRIBUTION LINES - LEAK TEST
- (3) WATER SYSTEM LINES - LEAK TEST PRIOR TO ECS SUIT
MODULE INSTALLATION

2.2.5 COOLANT PUMP MODULE TEST - STDR B3-E62**(A) TEST OBJECTIVES**

THIS TEST WILL CONSIST OF A PRESSURE DECAY LEAKAGE TEST OF THE COOLANT PUMP MODULE.

(B) SYSTEM SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE MODULE SHALL BE MOUNTED IN THE HOLDING FIXTURE IN THE WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|-----------------------|
| PTF245-00001-501 | PRESSURE TEST FIXTURE |
| 649XB-3-6-2 | PRESSURE RELIEF VALVE |

DATE 31 MAY 1968PAGE 28

REVISED _____

REPORT E217

REVISED _____

MOOEL 195B2.2.5 COOLANT PUMP MODULE TEST - STDR B3-E62 (CONTINUED)

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| PTF52-00001-4-509 | BACK-TO-BACK ADAPTER (2 REQ'D) |
| PTF52-00001-6-509 | BACK-TO-BACK ADAPTER |
| AN919D-6-4-505 | REDUCER |
| 4423G-2XDM | FILTER (10 MICRON ABSOLUTE) |
| PTE52-52000-501 | MANIFOLD |
| AN929D-5-505 | PRESSURE CAP (4 REQ'D) |
| R25800CC-4 | HOSE ASSEMBLY (7 REQ'D) |
| STANDARD "K" SIZE | NITROGEN BOTTLE (GN ₂ PER MIL-P-27401B) |
| TYPE CG, WINTON | SHERLOCK LEAK DETECTOR SOLUTION |
| ST52-52000-521 | SAFETY PROOF PRESSURE CAGE |

(E) TEST OUTLINE:

- (1) COOLANT PUMP MODULE - LEAK TEST BY PRESSURE DECAY METHOD.

DATE 31 MAY 1968PAGE 29

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.3 PHASE I TESTING

2.3.1 TEST PHILOSOPHY

(A) PHASE I TESTING ON S/C MODULES AND INDIVIDUAL SYSTEMS IS DESIGNED TO:

- (1) VERIFY THOSE SYSTEM FUNCTIONS AND/OR REDUNDANCIES WHICH CANNOT BE CHECKED IN MATED TESTS.
- (2) VERIFY PRIME POWER DISTRIBUTION AND CONTROL FROM POWER SOURCES TO BUSES AND EQUIPMENT DISCONNECTS.
- (3) ASSESS INTEGRITY OF FLUID AND GAS SYSTEMS.
- (4) VERIFY DETAIL PERFORMANCE OF VARIOUS SUBSYSTEM MODULES PRIOR TO INSTALLATION.
- (5) CONDUCT TESTS ON THOSE SYSTEMS WHEREBY SYSTEM DIFFERENCES ARE MORE EASILY FOUND AND MORE ECONOMICALLY FIXED PRIOR TO COMPLETING SPACECRAFT ASSEMBLY.

DATE 31 MAY 1968PAGE 30REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.3.2 PALLETS TESTS (UNMANNED VEHICLE)2.3.2.1 PALLET (L/H & R/H) INSTRUMENTATION TESTS - STDR B3-E22

(A) TEST OBJECTIVES

THIS TEST WILL VERIFY OPERATION OF THE INSTRUMENTATION EQUIPMENT LOCATED ON THE INSTRUMENTATION PALLETS.

(B) SYSTEMS SERVICED

(1) CAMERAS (INST. PANEL AND WINDOW)

(2) ANALOG TAPE RECORDER

(C) LOCATION AND CONFIGURATION

TESTS SHALL BE PERFORMED IN THE WHITE ROOM. PALLETS WILL BE MOUNTED PER FLIGHT CONFIGURATION EXCEPT FOR AGE INTERFACE.

(D) AGE REQUIRED

PART NUMBERNOMENCLATURE

52E440054-1

DC-DC CONV. LOAD BOX (2 REQ'D)

52T060231

BATTERY CART

52T060441-49

BREAKOUT BOX TAPE RECORDER

58T060001

F/M TELEMETRY GROUND STATION

58T060014

F/M HARDLINE

52E440011

PCM TELEMETRY GROUND STATION

58E040501

LAUNCH VEHICLE/LABORATORY SIMULATOR

DATE 31 MAY 1968PAGE 31

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.3.2.1 PALLET (L/H & R/H) INSTRUMENTATION TESTS - STDR B3-E22
(CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|----------------------------------|
| 58TO60044-7 | PCM TAPE RECORDER J3 TEST BOX |
| 52-04050 | PALLET TEST SET |
| 52-04051 | PALLET TEST SET CABLES |
| 803B | FLUKEMETER |
| 555 | OSCILLOSCOPE, TEKTRONIX |
| C12 | SCOPE CAMERA AND ADAPTER |
| 5015A | POWER SUPPLY |
| N/A | FREQUENCY COUNTER |

(E) TEST OUTLINE

- (1) PERFORM TM VOLTAGE DISTRIBUTION TEST.
- (2) FUNCTIONALLY TEST VCO ASSEMBLIES AND ADJUST
VCO'S AS REQUIRED.
- (3) FUNCTIONALLY CHECK THE PCM TAPE RECORDER.
- (4) FUNCTIONALLY CHECK ANALOG TAPE RECORDER.
- (5) FUNCTIONALLY CHECK WINDOW CAMERA.
- (6) FUNCTIONALLY CHECK THE SOUND PRESSURE LEVEL
SYSTEM.

DATE 31 MAY 1968PAGE 32REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.3.3 RECOVERY SECTION2.3.3.1 SEQUENTIAL SYSTEM TEST - STDR B3-A31

(A) TEST OBJECTIVES

THE OBJECTIVES OF THIS TEST ARE TO VERIFY THE INTERNAL WIRING AND OPERATIONS OF RELAY PANEL ASSEMBLIES USING THE UMBILICAL CABLE TESTER.

(B) SYSTEMS SERVICED

NONE

(C) CONFIGURATION AND LOCATION

THE RECOVERY SECTION SHALL BE MOUNTED ON THE MANUFACTURING LINE DOLLY IN THE WHITE ROOM. MAIN CHUTE CANNISTER AND SHINGLES NOT INSTALLED.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--------------------------|
| 52E200004 | UMBILICAL CABLE TESTER |
| 52T060232 | SHORTING PLUGS (6 REQ'D) |
| 52T060441-53 | TEST BOX |
| 52T060441-57 | TEST BOX |
| 52T060232 | CABLE |
| 58T060014 | CABLE |
| 5015A | POWER SUPPLY |
| 803B | FLUKEMETER |
| 555 | OSCILLOSCOPE, TEKTRONIX |
| ASTM-15F | THERMOMETER |
| 260 | SIMPSON, VOM |
| 52E440047 | T/C CHECKOUT BOX |

DATE 31 MAY 1968PAGE 33REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.3.3.1 SEQUENTIAL SYSTEM TEST - STDR B3-A31 (CONTINUED)

(E) TEST OUTLINE

- (1) VERIFY INTEGRITY OF RECOVERY SECTION RELAY PANEL FUNCTIONS.
- (2) VERIFY REDUNDANT GROUND WIRES.
- (3) VERIFY OPERATION OF VIBRATION PICKUPS, QD10 AND QD11 (GBQ #1 ONLY).
- (4) INSTRUMENTATION T/C POLARITY CHECK (GBQ ONLY).
- (5) PERFORM OPERATIONAL CHECK OF PILOT CHUTE DEPLOYMENT SWITCH.

2.3.3.2 COMMUNICATION SYSTEM TEST - ANTENNA AND COAXIAL SYSTEMS TEST - STDR B3-E42

(A) TEST OBJECTIVES

THIS TEST SHALL EVALUATE THE OPERATING CHARACTERISTICS OF THE STUB ANTENNA AND ASSOCIATED COAXIAL CABLE WITHIN THE RECOVERY SECTION.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE RECOVERY SECTION SHALL BE MOUNTED ON THE RECOVERY HANDLING DOLLY IN THE WHITE ROOM.

(D) AGE REQUIRED

| <u>PAR. NUMBER</u> | <u>NOMENCLATURE</u> |
|------------------------------|---------------------|
| N/A (RACKS 327, 328 AND 329) | COMM. VSWR CART |
| GR-874-F500 | LO-PASS FILTER |
| HP-420A | DETECTOR |
| HP-415D | SWR METER |
| PRD 219 | SWR DETECTOR |

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 34

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.3.3.2 COMMUNICATION SYSTEM TEST - ANTENNA AND COAXIAL SYSTEMS
TEST - STDR B3-E42 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

PART NUMBERNOMENCLATURE

HP-431B

RF POWER METER

HP-478A

THERMISTOR MOUNT

ASSOCIATED ATTENUATORS, COAX CABLES AND FITTINGS

(E) TEST OUTLINE

PERFORM INSERTION LOSS AND VSWR MEASUREMENT ON STUB ANTENNA AND CABLE AT VHF VOICE AND RECOVERY FREQUENCIES, (TM AND CMD FREQUENCY GBQ #1 ONLY).

2.3.4 RE-ENTRY CONTROL SECTION2.3.4.1 COMMUNICATION SYSTEM TEST - ANTENNA AND COAXIAL SYSTEMS
TEST - STDR B3-E42

(A) TEST OBJECTIVES

THIS TEST SHALL EVALUATE THE OPERATING CHARACTERISTICS OF THE STUB ANTENNA CABLE WITHIN THE RCS SECTION.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE RCS SECTION SHALL BE MOUNTED ON THE RCS HANDLING DOLLY IN THE WHITE ROOM.

(D) AGE REQUIRED

PART NUMBERNOMENCLATUREN/A (RACKS 327, 328
AND 329)

COMM. VSWR CART

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 35REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B

2.3.4.1 COMMUNICATION SYSTEM TEST - ANTENNA AND COAXIAL SYSTEMS
TEST - STDR B3-E42 (CONTINUED)

(C) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|---------------------|
| GR-874-F500 | LO-PASS FILTER |
| HP-420A | DETECTOR |
| HP-415D | SWR METER |
| PRD 219 | SWR DETECTOR |
| HP-431B | RF POWER METER |
| HP-478A | THERMISTOR MOUNT |

ASSORTED ATTENUATORS, COAX CABLES AND FITTINGS

(E) TEST OUTLINE

PERFORM INSERTION LOSS/VSWR ON RECOVERY SECTION STUB ANTENNA CABLE WITHIN RCS SECTION AT VHF VOICE AND RECOVERY FREQUENCIES, (TM AND CMD FREQUENCY GBQ #1 ONLY).

2.3.4.2 RCS VALIDATION AND FUNCTIONAL TEST - STDR B3-B81

(A) TEST OBJECTIVES

VERIFICATION OF CORRECT INSTALLATION AND INTEGRITY OF RE-ENTRY CONTROL SYSTEM SHALL BE ESTABLISHED BY PERFORMING LEAKAGE AND FUNCTIONAL TEST ON THE A AND B RINGS.

(B) SYSTEMS SERVICED

THE RCS PRESSURANT SYSTEM SHALL BE PRESSURIZED UP TO 3,000 PSIG (USING GH_6 AND GN_2) DURING CONDUCT OF THIS TEST. REGULATED PRESSURE SYSTEM PRESSURIZED TO 430 PSIG.

2.3.4.2 RCS VALIDATION AND FUNCTIONAL TEST - STDR B3-B81 (CONTINUED)

(C) LOCATION AND CONFIGURATION

THE RCS SECTION SHALL BE MOUNTED ON THE RCS SECTION HANDLING DOLLY IN THE WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| 52E420006 | PROPULSION SYSTEM CHECKOUT UNIT |
| 52E420007 | PROPULSION SYSTEM CONTROL UNIT (RACKS 31/32) |
| 52E420009 | PROPULSION SYSTEM ADAPTER KIT |
| 52E420097 | CEC HELIUM LEAK DETECTOR |
| 52E420173 | CHECK VALVE PRESSURE TEST KIT |
| 52E420144 | BOOST PUMP |
| 52E440036 | RATIOMETER |
| N/A | BUBBLER TEST ITEMS |
| 52T060421-3 | JUMPER UNIT, "A" PKG. |
| 52T060422-1 | CABLE, RCS THRUSTER CNTL |
| 52T060422-5 | CABLE, MOTOR VALVES |
| 52T060422-7 | CABLE, RCS AGE INTERCONNECT |
| 52T060441-31 | TEST BOX |
| 52T060441-41 | TEST BOX |
| 52T060442-141 | TEST BOX |
| 58T050044-5 | TEST BOX |
| 58T060044-3 | TEST BOX |

DATE 31 MAY 1968PAGE 37

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.3.4.2 RCS VALIDATION AND FUNCTIONAL TEST - STDR B3-B81 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|------------------------|
| FA129 | ABSOLUTE PRESS GAGE |
| 803B | FLUKEMETER |
| 260 | SIMPSON, METER |
| 5015A | POWER SUPPLY |
| N/A | 4K OHM RESISTOR (+ 1%) |
| ASTM 15F | THERMOMETER (+ 1/2°F.) |
| N/A | HEAT GUN |

(E) TEST OUTLINE

- (1) "B" PACKAGE FUNCTIONAL AND LEAK TEST
- (2) PRESSURE REGULATOR FUNCTIONAL TEST
- (3) PROPELLANT TANK BLADDER LEAK TEST (OXID/FUEL)
- (4) HIGH AND LOW PRESSURE SYSTEM LEAK TESTS
- (5) SOURCE AND REGULATED PRESSURE TRANSDUCER CALIBRATIONS
- (6) MOTOR VALVE FUNCTIONAL AND LEAK TEST
- (7) THRUST CHAMBER ASSEMBLY (TCA) FLOW TEST
- (8) TCA VALVE TIMING AND LEAK TEST
- (9) TEMPERATURE TRANSDUCERS FUNCTIONAL TEST
- (10) HEATER RESISTANCE AND FUNCTIONAL TEST

NOTE

STEPS 1 THROUGH 8 ARE TO BE
PERFORMED SEPARATELY ON THE
A AND B RINGS.

2.3.5 ADAPTER SECTION2.3.5.1 COOLANT SYSTEM PUMP MODULE TEST - STDR B3-E61

(A) TEST OBJECTIVES

THIS PROCEDURE FUNCTIONALLY TESTS BOTH PRIMARY AND SECONDARY COOLANT LOOPS OF THE COOLANT PUMP MODULE, PRIOR TO INSTALLATION INTO THE ADAPTER SECTION.

(B) SYSTEMS SERVICED

COOLANT SYSTEM

(C) LOCATION AND CONFIGURATION

THE COOLANT PUMP MODULE SHALL BE FIXTURE MOUNTED (NOT INSTALLED IN THE ADAPTER SECTION) IN THE WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|-------------------------------|
| 52E180004 | COOLANT CART |
| 52E180005 | COLD TRAP |
| 52E180022 | COOLANT AND SOLVENT CONTAINER |
| 52E180057-3 | HOSE ASSEMBLIES |
| 52E180097-3 | HOSE ASSEMBLIES |
| 52E180098-1 | HOSE ASSEMBLIES |
| 52E180109 | ECS ADAPTER CONTROL PANEL |
| 52D180305 | CABIN SIMULATOR |
| 52E180145 | POWER SUPPLY |
| 52E180150 | LEAKAGE TESTER |
| 52E180160 | FLUSH AND PURGE UNIT |

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 39

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.3.5.1 COOLANT SYSTEM PUMP MODULE TEST - STDR B3-E61 (CONTINUED)

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|------------------------------------|
| 52E180167 | COOLANT SAMPLING KIT |
| 52E180172 | REFRIGERATION UNIT |
| 52T050181-23 | TEST BOX |
| 52T060182-29 | CABLE |
| 52T060182-37 | ADAPTER SIMULATOR CABLE |
| MDE4583003 | LEAKAGE TESTER |
| 52T050183 | HOSE ASSEMBLIES |
| 52T060441-51 | TEST BOX |
| 58T060044 | TEST BOXES |
| 5015A | POWER SUPPLY |
| ASTM | THERMOMETER |
| FA 160 | PRESSURE GAGE - ABSOLUTE |
| N/A | PRESSURE GAGE (0-150 PSIG MIN.) |
| 803B | FLUKEMETER |
| 52E440036 | RATIOMETER |

(E) TEST OUTLINE

NOTE

TEST PROCEDURES APPLY TO BOTH
THE PRIMARY AND SECONDARY COOL-
ANT LOOPS.

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 40

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.3.5.1 COOLANT SYSTEM PUMP MODULE TEST - STDR B3-E61 (CONTINUED)

(E) TEST OUTLINE (CONTINUED)

- (1) SERVICE AND CYCLE PUMPS (VACUUM SERVICE).
- (2) COOL FLUID TO CYCLE THE WATER BOILER AND THERMAL SWITCH.
- (3) PUMP AND POWER SUPPLY OPERATION.
 - (A) CHECK MALFUNCTION LIGHTS BY TURNING PUMPS ON.
 - (B) OBTAIN PUMP INVERTER FREQUENCY, VOLTAGE AND WATTAGE AT VARIOUS INPUT VOLTAGES AND FLOW VS DIFFERENTIAL PRESSURE FOR EACH PUMP.
 - (C) VERIFY RESERVOIR LO-LEVEL LIGHT BY VARYING PRESSURE TO RESERVOIR.
- (4) VERIFY ALL TELEMETRY (TM) TEMPERATURE, PRESSURE AND BI-LEVEL OPERATIONS.
- (5) FLUSH, PURGE AND DRY ENTIRE SYSTEM.
- (6) CONDUCT MODULAR LEAK TEST (100 PSIG WITH GASEOUS NITROGEN).
- (7) CONDUCT CRACK AND RESEAT PRESSURE TEST ON WATER BOILER AND DETERMINE OPERATING LIMITS OF THE PRESSURE SWITCH.
- (8) VERIFY WATER BOILER HEATER OPERATION.
- (9) CHECK GROUND COOLING PRESSURE AND TEMPERATURE INSTRUMENTS.

DATE 31 MAY 1968PAGE 41REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.3.5.2 ECS MODULE TESTS - SITR B3-E72

(A) TEST OBJECTIVES

THIS TEST SHALL INCLUDE A FUNCTIONAL CHECK OF THE CREW TRANSFER UMBILICAL (CTUM) PRIOR TO INTERFACE WITH THE SPACECRAFT AND PRESSURE SUIT ASSEMBLY (PSA).

THE PRIMARY OXYGEN SUBSYSTEM SHALL BE FUNCTIONALLY CHECKED IN TWO MODULES BY THIS PROCEDURE. ONE MODULE WILL CONSIST OF THE BOTTLE, TRANSDUCER, FILL VALVE, REGULATOR AND SHUTOFF VALVE, THE OTHER MODULE CONSISTS OF A BOTTLE AND ADAPTER TO MATE WITH THE FIRST MODULE WHEN INSTALLED IN THE VEHICLE.

THE SECONDARY OXYGEN SUBSYSTEMS (LEFT-HAND AND RIGHT-HAND) SHALL BE FUNCTIONALLY CHECKED AS MODULES BY THIS PROCEDURE.

(B) SYSTEMS SERVICED

INDIVIDUAL OXYGEN MODULES ARE SERVICED TO 5000 PSIG WITH GASEOUS NITROGEN.

(C) LOCATION & CONFIGURATION

THE CTUM AND O₂ MODULES SHALL BE BENCH MOUNTED IN THE WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|------------------------------|
| N/A | BLACK LIGHT |
| 52E180010-1 | LOW PRESSURANT BENCH |
| 52E180076 | ECS TEST CONSOLE |
| 52T060185 | ECS INTEGRATED SYSTEM TESTER |
| 47110 | QUICK DISCONNECT NIPPLES (2) |

DATE 31 MAY 1968PAGE 42

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.3.5.2 ECS MODULE TESTS - STDR B3-E72 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| 47115 | QUICK DISCONNECT COUPLER (2) |
| FP 1/2-27-G-10/80 | FLOWMETER |
| 1/2 GSVT 45 OR 44 | FLOAT ASSEMBLY |
| N/A | DYNAMOMETER (CAPABLE OF 750 LBS TENSION) |
| N/A | TURNBUCKLE (CAPABLE OF 750 LBS TENSION) |
| DDP-50 | PUSH SCALE |
| N/A | WHEATSTONE BRIDGE |
| N/A | BREAKOUT BOXES (AS REQUIRED) |

(E) TEST OUTLINE

(1) CTUM

- (A) PERFORM VISUAL & DIMENSIONAL INSPECTIONS OF THE UMBILICAL.
- (B) PERFORM LEAKAGE TEST OF OXYGEN HOSE.
- (C) PERFORM OPERATING FORCE CHECKS ON QUICK DISCONNECTS.
- (D) PERFORM ELECTRICAL CONTINUITY & RESISTANCE CHECKS OF ELECTRICAL CONNECTORS & WIRING.
- (E) PERFORM DIELECTRIC STRENGTH & INSULATION RESISTANCE CHECKS OF ELECTRICAL CONNECTORS & WIRING.
- (F) PERFORM ABOVE TESTS UNDER VARIOUS TETHER LOAD CONDITIONS.

DATE 31 MAY 1968PAGE 43REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B**2.3.5.2 ECS MODULE TESTS - STDR B3-E72 (CONTINUED)****(E) TEST OUTLINE****(2) PRIMARY O₂ SUBSYSTEMS**

- (A) PERFORM TRANSDUCER CALIBRATION.
- (B) PERFORM PRESSURE DECAY LEAKAGE TEST.
- (C) PERFORM SHUTOFF VALVE LEAKAGE TEST.
- (D) PERFORM FILL VALVE PORT LEAKAGE TEST.
- (E) PERFORM PRESSURE REGULATION TEST.
- (F) PERFORM SUBSYSTEM BLOW-DOWN TEST.

NOTE

STEPS (A) THRU (F) ARE PERFORMED ON ONE MODULE. THE OTHER MODULE IS SUBJECTED TO STEP (B) ONLY.

(3) SECONDARY O₂ SUBSYSTEM

- (A) PERFORM TRANSDUCER CALIBRATION.
- (B) PERFORM PRESSURE DECAY LEAKAGE TEST.
- (C) PERFORM SHUTOFF VALVE LEAKAGE TEST.
- (D) PERFORM FILL VALVE PORT LEAKAGE TEST.
- (E) PERFORM PRESSURE REGULATION TEST.
- (F) PERFORM SUBSYSTEM BLOW-DOWN TEST.

NOTE

STEPS (A) THRU (F) ARE TO BE PERFORMED ON BOTH MODULES.

DATE 31 MAY 1968PAGE 44REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B**2.3.5.3 ADAPTER SECTION WEIGHT AND BALANCE - STDR B3-D202****(A) TEST OBJECTIVES**

THESE PROCEDURES ARE UTILIZED TO OBTAIN THE TOTAL WEIGHT AND LATERAL (X) AND VERTICAL (Y) CENTER OF GRAVITY OF THE ADAPTER SECTION. LONGITUDINAL (Z) CENTER OF GRAVITY WILL BE CALCULATED.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE ADAPTER SECTION SHALL BE IN AS NEAR FLIGHT CONFIGURATION AS POSSIBLE, INVERTED AND MOUNTED ON THE SPACECRAFT ALIGNMENT FIXTURE. DEVIATIONS FROM FLIGHT CONFIGURATION WILL BE CALCULATED.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|------------------------------|
| 52E010005 | SLING ASSEMBLY |
| 52D060001 | S/C ALIGNMENT FIXTURE |
| 52E060004 | TOOL KIT - OPTICAL ALIGNMENT |
| 52-00001-505 | PORTABLE WHITE ROOM |
| 52-00001-541 | WORK STAND |

(E) TEST OUTLINE

- (1) WEIGH ADAPTER, TO EXHIBIT ACCURACY OF WEIGHING INSTRUMENTS, MOVE LOAD CELLS CLOCKWISE ONE POSITION.
- (2) CALCULATE ORDINATES OF ADAPTER CENTER OF GRAVITY.

2.3.5.4 RETROCKET & PACS ALIGNMENT - STD R B3-D200**(A) TEST OBJECTIVES**

ALIGNMENT OF THE SIX RETROGRADE ROCKET INTERFACES IN THE ADAPTER SECTION WILL BE ACCOMPLISHED USING A DUMMY ROCKET (LIVE ROCKETS WILL NOT BE USED).

THE DUMMY RETROCKET TOOL WILL BE UTILIZED TO ALIGN EACH ROCKET INTERFACE TO THE CALCULATED SPACECRAFT CENTER OF GRAVITY LOCATION WHICH EXISTS DURING NORMAL RETROGRADE AT THE MID BURN POINT OF EACH RESPECTIVE ROCKET.

THE PACS THRUSTERS WILL BE ALIGNED WITH RESPECT TO THE GEMINI B c.g. FOR AN ABORT CONDITION.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE ADAPTER SECTION SHALL BE MOUNTED ON THE SPACECRAFT ALIGNMENT FIXTURE.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|---|
| 52E010005 | SLING ASSEMBLY |
| 52E060001 | S/C ALIGNMENT FIXTURE |
| 52E060004 | TOOL KIT - OPTICAL ALIGNMENT |
| 52E060024 | LENGTH GAGE - RETROCKET ADJUSTMENT STUD |

DATE 31 MAY 1968
REVISED 2 APRIL 1969
REVISED _____

ST. LOUIS, MISSOURI

PAGE 46
REPORT E217
MODEL 195B**2.3.5.4 RETROCKET & PACS ALIGNMENT STDR B3-D200 (CONTINUED)****(D) AGE REQUIRED (CONTINUED)**

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|------------------------|
| 58E060501 | RETROCKET LINKAGE GAGE |
| AFA52-52702-501 TD | DUMMY RETROCKET (MOD.) |
| 52-00001-541 | WORK STAND |
| 52-00001-505 | PORTABLE WHITE ROOM |
| T2 | THEODOLITE |

(E) TEST OUTLINE

- (1) ALIGN ONE RETROCKET INTERFACE (THRUST VECTOR) WITH RESPECT TO THE c.g. AT TIME OF RETROGRADE (USING OPTICAL INSTRUMENTS).
- (2) ALIGN REMAINING FIVE ROCKET INTERFACES (ONE AT A TIME).
- (3) ALIGN PACS THRUSTER WITH RESPECT TO THE GEMINI B c.g. FOR AN ABORT CONDITION.

2.3.6 CABIN SECTION**2.3.6.1 ENVIRONMENTAL CONTROL SYSTEM (ECS) SUIT MODULE TEST - STDR B3-E71****(A) TEST OBJECTIVES**

THIS TEST SHALL FUNCTIONALLY CHECK THE ECS SUIT MODULE PRIOR TO INSTALLATION IN SPACECRAFT.

(B) SYSTEMS SERVICED

SUIT HEAT EXCHANGER IS SERVICED WITH WATER.

2.3.6.1 ENVIRONMENTAL CONTROL SYSTEM (ECS) SUIT MODULE TEST -
STDR B3-E71 (CONTINUED)

(C) LOCATION AND CONFIGURATION

THE ECS SUIT MODULE SHALL BE BENCH MOUNTED IN THE
 WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--------------------------|
| 52E180010 | LOW PRESSURE BENCH |
| 52E180033 | DEMAND REG. TOOL |
| 52E180146 | FORCE INDICATOR GAGE KIT |
| 52E180150 | COOLANT LEAK RATE TESTER |
| 52T060183 | HOSE ASSEMBLIES |
| 52-83708 | QUICK DISCONNECTS |

(E) TEST OUTLINE

- (1) PERFORM LEAK TEST OF COOLANT SYSTEM USING GASEOUS NITROGEN.
- (2) DEMAND REGULATORS LEAKAGE AND FUNCTIONAL TEST.
- (3) CABIN PRESSURE REGULATOR LEAKAGE AND FUNCTIONAL TEST.
- (4) CHECK VALVES LEAK TEST.
- (5) ABSOLUTE PRESSURE SWITCH OPERATION.
- (6) O₂ HI RATE AND SYSTEM SHUTOFF VALVE LEAKAGE, TORQUE AND FUNCTIONAL TESTS.
- (7) COMPRESSORS AND CHECK VALVES FLOW, POWER OPERATION AND LEAKAGE TESTS.

DATE 31 MAY 1968PAGE 48

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.3.6.1 ENVIRONMENTAL CONTROL SYSTEM (ECS) SUIT MODULE TEST -
STDR B3-E71 (CONTINUED)

(E) TEST OUTLINE (CONTINUED)

- (8) SUIT HEAT EXCHANGER FUNCTIONAL, WATER SEPARATION AND LEAKAGE TESTS.
- (9) SUIT FLOW CONTROL VALVES LEAKAGE AND TORQUE TESTS.
- (10) SOLIDS TRAP LEAKAGE TEST.
- (11) SYSTEM FLOW AND LEAK CHECK.

2.3.5.2 COMMUNICATIONS SYSTEM TEST - ANTENNA AND COAXIAL SYSTEMS
TEST STDR B3-E42

(A) TEST OBJECTIVES

THIS TEST SHALL EVALUATE THE OPERATING CHARACTERISTICS OF THE RF PATHS WITHIN THE CABIN. INSERTION LOSS FOR EACH UNIT ANTENNA CABLING SHALL BE DETERMINED. INSERTION LOSS VSWR AND PHASE ANGLE (WHERE APPLICABLE) MEASUREMENTS WILL BE PERFORMED.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE CABIN SECTION SHALL BE MOUNTED ON THE RE-ENTRY MODULE HANDLING DOLLY IN THE WHITE ROOM.

(D) AGE REQUIRED

PART NUMBER

NOMENCLATURE

N/A (R327, 328, 329)

COMM. VSWR CART

52D190263-1

DESCENT ANTENNA ADAPTER

52D190264

C-BAND ANTENNA PROBE

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 49

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.3.6.2 COMMUNICATIONS SYSTEM TEST - ANTENNA AND COAXIAL SYSTEMS
TEST - STDR B3-E42 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--|---------------------|
| 52E190012 | C-BAND PROBE ASS'Y |
| 52E190027-55 | COAX RELAY TEST BOX |
| 52E200014-2443-30 | CABLE |
| GR-874-F500 | LO-PASS FILTER |
| HP420A | DETECTOR |
| HP-415D | SWR METER |
| PRD-219 | SWR DETECTOR |
| HP-478A | THERMISTOR MOUNT |
| HP-806B | COAX SLOTTED LINE |
| HP-431B | POWER METER |
| GR-1606A | IMPEDANCE BRIDGE |
| HP-764D | DIRECTIONAL COUPLER |
| PRD-25CA | DETECTOR PROBE |
| ASSORTED ATTENUATORS, COAX CABLES AND FITTINGS | |

(E) TEST OUTLINE

PERFORM INSERTION LOSS, VSWR AND PHASE ANGLE (WHERE APPLICABLE) MEASUREMENTS ON THE FOLLOWING.

- (1) HF T/R TO WHIP ANTENNA CABLE
- (2) VHF T/R #1 AND #2 TO RCS INTERFACE
- (3) VHF T/R #1 AND #2 TO DESCENT ANTENNA
- (4) RECOVERY BEACON TO RECOVERY ANTENNA AND TO RCS INTERFACE.

DATE 31 MAY 1968PAGE 50

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.3.6.2 COMMUNICATIONS SYSTEM TEST - ANTENNA AND COAXIAL SYSTEMS TEST - STDR B3-E42 (CONTINUED)

(E) TEST OUTLINE (CONTINUED)

(5) C BEACON ANTENNA SYSTEM AND POWER DIVIDER INPUT TO C BAND ANTENNA SYSTEM.

(6) TM TO RCS INTERFACE AND TO DESCENT ANTENNA (GBQ #1 ONLY).

(7) CMD CABLES TO RCS INTERFACE (GBQ #1 ONLY).

2.3.6.3 CABIN SECTION ELECTRICAL SYSTEMS TEST - STDR B3-CL1

(A) TEST OBJECTIVES

THIS TEST SHALL VERIFY PRIME POWER DISTRIBUTION TO SPACECRAFT SYSTEMS AND PROVIDE INITIAL TESTING OF THE INSTRUMENTATION AND COMMUNICATION SYSTEMS. PRIME POWER DISTRIBUTION SHALL BE VERIFIED FOR THE POWER SYSTEM, GUIDANCE AND CONTROL SYSTEM, COMMUNICATIONS SYSTEMS AND THE INSTRUMENTATION SYSTEM. BAROSTAT OPERATIONAL CHECKS WILL BE PERFORMED.

(B) SYSTEMS SERVICED

CAMERAS

TAPE RECORDER

(C) LOCATION AND CONFIGURATION

THE CABIN SECTION SHALL BE MOUNTED ON THE HANDLING DOLLY IN THE WHITE ROOM. PALLETS ELECTRICALLY CONNECTED BUT NOT INSTALLED IN S/C (GBQ #1 ONLY).

(D) AGE REQUIRED

PART NUMBER

NOMENCLATURE

52T060191-17

VOLTAGE BREAKOUT BOX

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 51

REVISED 2 APRIL 1969

REPORT E217

REVISED _____

MODEL 195B

2.3.6.3 CABIN SECTION ELECTRICAL SYSTEMS TEST - STD R B3-C11 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--------------------------------------|
| 52T060191-37 | PHASE SHIFTER TEST BOX |
| 52T060192-15 | CABLE - VOLTAGE VERIFICATION |
| 52T060192-17 | CABLE - VOLTAGE VERIFICATION |
| 52T060192-19 | CABLE - VOLTAGE VERIFICATION |
| 52T060192-21 | CABLE - VOLTAGE VERIFICATION |
| 52T060231 | BATTERY CART |
| 52T060231 | EXTERNAL PWR CNTRL & MONITOR CONSOLE |
| 52T060232 | CABLE |
| * 52T060441-1 | T/M XMTR INPUT TEST BOX |
| 52T060441-3 | TEST BOX, INDICATOR |
| 52T060441-17 | BREAKOUT BOX AGE 18 AND 19 |
| 52T060441-19 | AGE 22 BREAKOUT BOX |
| 52T060441-21 | AGE 34 BREAKOUT BOX |
| 52T060441-31 | TEST BOX INSTRUMENTATION |
| 52T060441-53 | BREAKOUT BOX |
| 52T060442-41 | TEST SUPPORT CABLE |
| 52T060442-45 | TEST SUPPORT CABLE |
| 52T060442-51 | TEST SUPPORT CABLE |
| * 52T060442-77 | CABLE FROM COMM. TO T/M J/B |
| * UNMANNED ONLY | |

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 52

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.3.6.3 CABIN SECTION ELECTRICAL SYSTEM TEST - STDR B3-C11
(CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| * 52T060442-79 | CABLE FROM COMM. TO T/M J/B |
| 52E180003 | (VACUUM PUMP ONLY) |
| 52E190007-1 | HEADSET (2 REQ'D) |
| 58E190514-25 | AMPLIFIER ASSEMBLY (2 REQ'D) |
| 52E200004 | UMBILICAL CABLE TESTER |
| * 52E230114 | PALLET EXTENSION CABLES KIT |
| 52E270423-1 | RCS SLVB ASSEMBLY |
| 52E270431-1 | ACE J3 T/P BOX |
| 52E270434-1 | ACE J4 T/P BOX |
| 52E270438-1 | ACE J5 T/P BOX |
| 52E270442-1 | ACE J6 T/P BOX |
| 52E270544-1 | IMU T/P BOX |
| 52E270545-1 | IMU T/P BOX |
| 52E360013 | AIR DATA SYSTEMS TESTER |
| 52E440011 | PCM GROUND STATION |
| 52E440033 | TEMPERATURE REFERENCE HARNES ASSEMBLY |
| 52E440044-1 | TEMPERATURE MONITOR SYSTEM |
| 52E440053 | T/M CONTROL CONSOLE ASSEMBLY |
| 52E440064-1 | LOAD - DC TO DC CONVERTER (2 REQ'D) |

* UNMANNED ONLY

DATE 31 MAY 1968PAGE 53REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B**2.3.6.3 CABIN SECTION ELECTRICAL SYSTEM TEST - STDR B3-C11
(CONTINUED)****(D) AGE REQUIRED (CONTINUED)**

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|-----------------------------------|
| 52E440065 | DISTRIBUTION SYSTEM TIMER |
| * 58T060001 | F/M TELEMETRY GROUND STATION |
| * 58T060014-3 | FM HARDLINE |
| 58T060014-4 | UMBILICAL ADAPTER FM HARDLINE |
| 58T060023 | SHUNT SELECT PANEL |
| * 58T060044-1 | AGE 173 BREAKOUT BOX |
| 58T060044-3 | BREAKOUT BOX |
| 58T060044-5 | BREAKOUT BOX |
| * 58T060044-7 | PCM TAPE RECORDER J3 TEST BOX |
| * 58T060044-9 | SEP ENABLE AGE BOX |
| * 58E040501 | LV/L SIMULATOR |
| 58D042002-1 | SIMULATOR, S/C ADAPTER CABLES |
| 58D042002-3 | SIMULATOR, POWER CABLE |
| * 58D042002-5 | SIMULATOR, SFL CABLE |
| * 58D042004-1 | SOUND PRESSURE LEVEL CHAMBER |
| * 58D042004-3 | CABIN MICROPHONE ADAPTER PLATE |
| 58D042012-1 | PLATFORM PHASE INDICATOR CHECKOUT |
| 58D42007-5 | PRESSURE PORT FITTING |
| 58D442054-1 | TELEMETRY JUNCTION BOX |

* UNMANNED ONLY

DATE 31 MAY 1968PAGE 54REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195E2.3.6.3 CABIN SECTION ELECTRICAL SYSTEM TEST - STDR B3-C11
(CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|----------------------|--|
| * 52-04050 | PALLET TEST SET |
| * 52-04051-11 | PALLET TEST SET CABLES |
| 559100 | RECOVERY INTERPHONE |
| 25-102B | DECADE RESISTANCE BOX |
| A7085 | HELIPOT, 10K OHM |
| 555 | OSCILLOSCOPE, TEKTRONIX |
| C12 | SCOPE CAMERA AND ADAPTER |
| 5015A | POWER SUPPLY |
| 803B | FLUKEMETER |
| B/B 4904 | DOUBLE PULSE GENERATOR |
| HP 420A | DETECTOR |
| FA-129 | ABSOLUTE PRESSURE GAGE |
| * MODEL 328 | BALLANTINE RMS METER |
| RACKS 327, 328 & 329 | COMMUNICATION VSWR CART |
| 18000-100 | POWER SUPPLY - AIR DATA SYSTEM TESTER |
| N/A | UMBILICAL HARDLINE ADAPTER |
| N/A | RF HARDLINE |

* UNMANNED ONLY

2.3.6.3 CABIN SECTION ELECTRICAL SYSTEM TEST - STDR B3-C11
(CONTINUED)

(D) ACE REQUIRED (CONTINUED)

PART NUMBER

NOMENCLATURE

N/A

TEST BOX SUIT DISCONNECT

VHF TEST ANTENNAS, ASSORTED ATTENUATORS, COAX
CABLES AND FITTINGS.

260

SIMPSON, VOM

ASTM15F

THERMOMETER

(E) TEST OUTLINE (POWER SYSTEM AND PRIME POWER DISTRIBUTION)

(1) PREPOWER CHECK (CHECK FUSES AND ENSURE S/C
BUSSES ARE NOT SHORTED TO THE GROUND).

(2) MAIN, ADAPTER AND SQUIB BATTERY WIRING CHECKS

(3) LAB INTERFACE DIODE LEAKAGE CHECKS

(4) EXTERNAL POWER APPLICATION CHECKS

(5) CABIN AND TRANSFER LTS TEST

(6) SYSTEMS VOLTAGE DISTRIBUTION CHECKS

INSTRUMENTATION, GUIDANCE AND CONTROL, COMMUNI-

CATION, ENVIRONMENTAL CONTROL SECTION, RE-ENTRY

CONTROL SECTION AND CABIN/ADAPTER INTERFACE CHECKS.

(7) SHUNT CALIBRATION

(8) BUS-TIE SW OPERATION

(9) MAIN SUB BUS TRANSFER CAPABILITY

(F) TEST OUTLINE (INSTRUMENTATION SYSTEM)

(1) REGULATED VOLTAGE AND NOISE TEST

2.3.6.3 CABIN SECTION ELECTRICAL SYSTEMS TEST - STDR 43-C11
(CONTINUED)

(F) TEST OUTLINE (INSTRUMENTATION SYSTEM) (CONTINUED)

- (2) FUNCTIONALLY CHECK THE PRESSURE PARAMETERS
- (3) FUNCTIONALLY CHECK THE TEMPERATURE PARAMETERS
- (4) ACCELEROMETER (SENSITIVITY AXIS) TEST (GBQ #1 ONLY)
- (5) FUNCTIONALLY CHECK CABIN INDICATORS
- (6) FUNCTIONALLY CHECK SOUND PRESSURE LEVEL (SPL) SYSTEM (GBQ #1 ONLY)
- (7) FUNCTIONALLY CHECK VCO'S (GBQ #1 ONLY)
- (8) FUNCTIONALLY CHECK VIBRATION PICKUPS (GBQ #1 ONLY)
- (9) FUNCTIONALLY CHECK PCM AND ANALOG T/R (GBQ #1 ONLY)
- (10) RE-ENTRY LOCAL STATIC PRESSURE SYSTEM CALIBRATION (GBQ #1 ONLY)
- (11) FUNCTIONALLY CHECK CAMERAS (GBQ #1 ONLY)
- (12) PERFORM DATA RUN FOR DATA REDUCTION AND EVALUATION

(G) TEST OUTLINE (COMMUNICATIONS)

- (1) PERFORM VOLTAGE DISTRIBUTION TEST
- (2) WITH TEST ANTENNAS ATTACHED TO S/C OR VIA HARD-LINE, TRANSMIT RF BETWEEN S/C AND VSWR CART TO CHECK OPERATION OF THE FOLLOWING:
 - (A) VHF VOICE T/R, AND HF VOICE T/R.
 - (B) VOICE COMM CHECKS USING ASTRO 1, MIC 1 AND 2 HEADSET 1 AND 2; ASTRO 2 MIC 1 AND 2, HEADSET 1 AND 2.

DATE 31 MAY 1968PAGE 57

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.3.6.3 CABIN SECTION ELECTRICAL SYSTEMS TEST - STDR B3-C11
(CONTINUED)

(G) TEST OUTLINE (COMMUNICATIONS) (CONTINUED)

(2) (CONTINUED)

(C) VERIFY VOX KEYING OF THE VHF T/R.

(D) VOICE QUAL. HF T/R AND VHF T/R.

(E) C-BAND BEACON

(F) RECOVERY BEACON

(G) TM (GBQ #1 ONLY)

(H) PHASE SHIFTER POWER SUPPLY

2.3.6.4 ENVIRONMENTAL CONTROL SYSTEM TEST - STDR B3-C71

(A) TEST OBJECTIVES

THIS TEST SHALL FUNCTIONALLY CHECK CABIN AND STATIC SYSTEM FOR LEAKAGE.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE CABIN SECTION SHALL BE MOUNTED ON THE RE-ENTRY MODULE HANDLING DOLLY IN THE WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|---------------------|
| 52-050855 | GAS REG. ASS'Y |
| 52-83708 | QUICK DISCONNECTS |
| 52T060044-3 | T/M TEST BOX |
| 52T060181-5 | L.P. LEAK TESTER |
| 52T060183 | HOSE ASSEMBLIES |

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 58

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.3.6.4 ENVIRONMENTAL CONTROL SYSTEM TEST - STDR B3-C71
(CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|----------------------|
| 52E180027 | S/C LEAKAGE TESTER |
| 52E180033 | DEMAND REG. TOOL |
| 52E180076 | ECS CHECKOUT CONSOLE |
| 52E440036 | RATIOMETER |
| 5015A | POWER SUPPLY |
| 803B | FLUKEMETER |

(E) TEST OUTLINE

- (1) STATIC SYSTEM LEAK CHECK (NEGATIVE LEAK TEST AND ALTIMETER FUNCTIONAL CHECK)
- (2) CABIN LEAK CHECK AND RELIEF VALVE FUNCTIONAL CHECK.

2.3.6.5 (SEATS ASTRONAUTS) WEIGHT AND BALANCE - STDR B3-E202
(AVE 2 ONLY)

(A) TEST OBJECTIVES

THIS STDR OUTLINES THE PROCEDURE FOR INSTALLING THE EJECTION SEAT ON THE c.g. LOCATING FIXTURE FOR DETERMINING THE STATIC CENTER OF GRAVITY OF THE EJECTION SEAT AND ASTRONAUT.

(B) SYSTEMS SERVICED

NONE

DATE 31 MAY 1968PAGE 59

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.3.6.5 (SEATS ASTRONAUTS) WEIGHT AND BALANCE - STDR B3-E202
(AVE 2 ONLY) (CONTINUED)

(C) LOCATION AND CONFIGURATION

THE EJECTION SEAT SHALL BE LOCATED ON THE EJECTION SEAT DOLLY IN THE WEIGHT AND BALANCE AREA.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|---|
| 52E060004 | TOOLING KIT-WEIGHING, INDEXING AND OPTICAL EQUIP. |
| 52E060005 | EJECTION SEAT c.g. LOCATING FIXTURE |
| 52E180002 | SEAT HOISTING SLING |
| 52E180018 | SEAT DOLLY |

(E) TEST OUTLINE

- (1) EJECTION SEAT c.g.
- (2) LATERAL c.g. DETERMINATION (VERTICAL ADAPTER)
- (3) ECCENTRIC c.g. DETERMINATION (TILT-BAK ADAPTER)
- (4) LONGITUDINAL c.g. DETERMINATION (VERTICAL ADAPTER)
- (5) VERTICAL c.g. DETERMINATION (HORIZONTAL ADAPTER)
- (6) REPEAT STEPS 1 THRU 5 WITH ASTRONAUT IN SEAT.

2.3.7 RE-ENTRY MODULE

2.3.7.1 RE-ENTRY MODULE WEIGHT AND BALANCE - STDR B3-G202

(A) TEST OBJECTIVES

PROCEDURES CONTAINED IN THIS DOCUMENT ARE UTILIZED TO OBTAIN THE WEIGHT AND THREE AXIS CENTER OF GRAVITY OF THE RE-ENTRY MODULE (MATED CABIN, RCS AND RECOVERY SECTIONS).

DATE 31 MAY 1968PAGE 60REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.3.7.1 RE-ENTRY MODULE WEIGHT AND BALANCE - STDR B3-G202
(CONTINUED)

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE RE-ENTRY MODULE SHALL BE IN AS NEAR FLIGHT CONFIGURATION AS POSSIBLE AND INSTALLED IN THE ALIGNMENT FIXTURE AND c.g. INDEXING FIXTURE.

DEVIATIONS FROM FLIGHT CONFIGURATION SHALL BE CALCULATED.

(D) AGE REQUIRED

PART NUMBERNOMENCLATURE

52E010038

HOISTING SLING

52E060001

S/C ALIGNMENT FIXTURE

52E060002

WEIGHING & c.g. FIXTURE

52E060004

TOOL KIT - OPTICAL ALIGNMENT

52E00001-505

PORTABLE WHITE ROOM

52-00001-541

WORK STAND

(E) TEST OUTLINE

- (1) PERFORM HORIZONTAL WEIGHING OF RE-ENTRY MODULE. TO EXHIBIT ACCURACY OF WEIGHING INSTRUMENTS MOVE LOAD CELLS CLOCKWISE ONE POSITION AND REWEIGH. CALCULATE HORIZONTAL (Z) CENTER OF GRAVITY.
- (2) DETERMINE LOCATION OF FORWARD WEIGHING RING FOR TRUE c.g.

MCDONNELL

ST. LOUIS, MISSOURI

DATE 2 APRIL 1969

PAGE 60A

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.3.7.1 RE-ENTRY MODULE WEIGHT AND BALANCE - STDR B3-G202
(CONTINUED)

(E) (CONTINUED)

- (3) PERFORM VERTICAL WEIGHING OF RE-ENTRY MODULE. TO EXHIBIT ACCURACY OF WEIGHING INSTRUMENTS MOVE LOAD CELLS CLOCKWISE ONE POSITION AND REWEIGH. CALCULATE LATERAL (X) AND VERTICAL (Y) CENTER OF GRAVITY.

2.4 PHASE II TESTING (ASSEMBLED SPACECRAFT)

2.4.1 TEST PHILOSOPHY

INTEGRATED SPACECRAFT TESTING PROVIDES THE MAXIMUM CONFIDENCE IN THE FLIGHT READINESS OF THE SPACECRAFT BECAUSE:

- (A) SPACECRAFT SYSTEMS SHALL BE IN FLIGHT CONFIGURATION AS NEAR AS POSSIBLE.
- (B) END-TO-END SYSTEM TESTING IS EMPHASIZED BOTH BY SEPARATE SYSTEMS TESTS AND IN A CONCURRENT OPERATION SIMULATING ACTUAL FLIGHTS.

2.4.2 COMMUNICATION SYSTEMS TEST - ANTENNA AND COAXIAL SYSTEMS TEST - STDR B3-E42

(A) TEST OBJECTIVES

OPERATING CHARACTERISTICS OF THE CABIN AND CABIN SECTION TO RECOVERY SECTION RF PATHS SHALL BE VERIFIED BY THIS TEST.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE SPACECRAFT SHALL BE VERTICAL AND MOUNTED ON THE SPACECRAFT HANDLING DOLLY IN THE WHITE ROOM. ALL SPACECRAFT RF TRANSMISSION EQUIPMENT SHALL BE IN FLIGHT CONFIGURATION.

(D) ACE REQUIRED

PART NUMBER

N/A (RACKS 327, 328, 329)

52E130027-55

NOMENCLATURE

COMM. VSWR CART

COAX RELAY TEST BOX

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 62

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.4.2 COMMUNICATION SYSTEMS TEST - ANTENNA AND COAXIAL SYSTEMS TEST - STDR B3-E42 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|-------------------------|
| L-2443-30 | CABLE |
| GR-1606A | IMPEDANCE BRIDGE |
| GR-874-F500 | LO-PASS FILTER |
| HP-806B | COAXIAL SLOTTED SECTION |
| HP-420A | DETECTOR |
| HP-415D | SWR METER |
| HP-431B | POWER METER |
| HP-478A | THERMISTOR MOUNT |
| PRD-250A | DETECTOR PROBE |
| PRD-219 | SWR DETECTOR |

ASSORTED ATTENUATORS, COAXIAL CABLES AND FITTINGS

(E) TEST OUTLINE

- (1) PERFORM INSERTION LOSS AND/OR VSWR MEASUREMENT ON THE FOLLOWING:

NOTE

WORK STAND MOVED AWAY FROM S/C
FOR APPLICABLE VSWR MEASUREMENT.

- (A) EXTEND HF WHIP ANTENNA
- (B) HF T/R TO HF WHIP ANTENNA VSWR
- (C) RETRACT HF WHIP ANTENNA
- (D) VHF VOICE T/R AND RECOVERY BEACON TO STUB ANTENNA, INSERTION LOSS AND VSWR.

2.4.2 COMMUNICATION SYSTEMS TEST - ANTENNA AND COAXIAL SYSTEMS TEST -
STDR B3-E42 (CONTINUED)

(E) TEST OUTLINE (CONTINUED)

(1) (CONTINUED)

(E) TM FREQUENCY TO STUB ANTENNA (GBQ #1 ONLY)

(F) CMD FREQUENCY TO STUB ANTENNA (GBQ #1 ONLY)

(G) C-BAND BEACON TO C-BAND ANTENNAS (VSWR ONLY)

2.4.3 COOLANT SYSTEM LEAK & FUNCTIONAL TEST - STDR B3-H61

(A) TEST OBJECTIVES

VALIDATION OF THE SPACECRAFT COOLANT SYSTEM SHALL BE ACCOMPLISHED BY PERFORMING A LEAK TEST OF THE COOLANT SYSTEM. THE SYSTEM WILL BE PRESSURIZED WITH GN₂ AND THE LEAKAGE WILL BE DETERMINED BY MONITORING SYSTEM PRESSURE DECAY RATES TO VERIFY INTEGRITY OF INSTALLATION. AFTER COMPLETION OF THE TEST, THE SYSTEM SHALL BE SERVICED.

(B) SYSTEMS SERVICED

COOLANT SYSTEM

(C) LOCATION AND CONFIGURATION

THE SPACECRAFT SHALL BE MOUNTED ON THE SPACECRAFT DOLLY IN THE WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--------------------------|
| 52E180150 | COOLANT LEAK TESTER |
| 52T060183 | HOSE ASSY. |
| 52E180004 | COOLANT SERVICING UNIT |
| 52E180150 | COOLANT LEAK RATE TESTER |
| 52E180167 | COOLANT SAMPLE KIT |

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 64

REVISED 2 APRIL 1969

REPORT E217

REVISED _____

MODEL 195B

2.4.3 COOLANT SYSTEM LEAK & FUNCTIONAL TEST - STDR B3-H61 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

PART NUMBER

NOMENCLATURE

52E180172

AUXILIARY REFRIGERATION UNIT

52E180183

COOLANT PRESS. KIT

(E) TEST OUTLINE

NOTE

TEST PROCEDURES APPLY TO BOTH

← THE PRIMARY AND SECONDARY SYSTEMS.

- (1) PRESSURIZE SYSTEM WITH GN₂ AND LEAK TEST TOTAL SYSTEM BY MONITORING PRESSURE DECAY.
- (2) CYCLE THE DIVERTER VALVE AND CHECK EQUIPMENT SECTION PRESSURE DROP AT VARIOUS FLOWRATES AND VERIFY OPERATION OF THE DIVERTER AND CHECK VALVES.
- (3) FLOW FLUID AT VARIOUS TEMPERATURES THROUGH THE GEMINI "B"/LAB HEAT EXCHANGER TO VERIFY THE TEMPERATURE CONTROL POINTS.
- (4) CHECK DIVERTER VALVES AND CHECK VALVES FOR INTERNAL LEAKAGE.
- (5) SERVICE SYSTEM PER STDR.
- (6) COOLANT SYSTEM FUNCTIONAL CHECKOUT.

2.4.4 ECS VALIDATION TEST - STDR B3-H71

(A) TEST OBJECTIVES

THIS TEST SHALL VALIDATE THE ECS SYSTEM IN THE FULLY MATED SPACECRAFT.

DATE 31 MAY 1968PAGE 65

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.4 ECS VALIDATION TEST - STD R B3-H71 (CONTINUED)

(B) SYSTEMS SERVICED

- (1) PRIMARY O₂ - 5000 PSIG GN₂
- (2) SECONDARY O₂ - 5000 PSIG GN₂
- (3) COOLANT SYSTEM

(C) LOCATION AND CONFIGURATION

THE MATED SPACECRAFT SHALL BE MOUNTED ON THE HANDLING DOLLY IN A VERTICAL POSITION IN THE WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|----------------------------------|
| 52-050855 | GAS REG. ASS'Y |
| 52-050856 | H ₂ O SYS LEAK TESTER |
| 52-050857 | BREAKOUT BOXES |
| 52-050950 | HIGH PRESE. COMPRESSOR |
| MDE4583003 | CAPSULE LEAKAGE TESTER |
| 52-83708 | QUICK DISCONNECTS |
| 52E180004 | COOLANT CART |
| 52E180005 | COLD TRAP |
| 52E180022 | COOLANT AND SOLVENT CONTAINERS |
| 52E180027 | SPACECRAFT LEAK TESTER |
| 52E180033 | DEMAND REG. TOOL |
| 52E180052 | HOSE ASS'Y PRI O ₂ |
| 52E180076 | ECS TEST CONSOLE |
| 52E180077 | HOSE ASS'Y SEC O ₂ |
| 52E180078 | HOSE ASS'Y SEC O ₂ |

DATE 31 MAY 1968PAGE 66

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.4 ECS VALIDATION TEST - STDR B3-H71 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|-----------------------------------|
| 52E180103 | HOSE ASS'Y TEST CONSOLE |
| 52E180107 | HOSE ASS'Y |
| 52E180108 | HOSE ASS'Y |
| 52E180109 | CABIN SIMULATOR |
| 52E180120 | HOSE ASS'Y TEST CONSOLE |
| 52E180145 | POWER SUPPLY |
| 52E180146 | FORCE INDICATOR GAGE KIT |
| 52E180150 | LEAK TESTER |
| 52E180160 | FLUSH AND PURGE KIT |
| 52E180167 | COOLANT SAMPLE KIT |
| 52E180172 | REFRIGERATION UNIT |
| 52E180194 | L.P. LEAK RATE TESTER |
| 52E200014 | TEST CABLES |
| 52T060181-7 | DEMAND REG. TOOL |
| 52T060181-25 | ORIFICE PLATE |
| 52T060181-29 | ORIFICE PLATE |
| 52T060183 | HOSE ASSEMBLIES |
| 52T060184 | HEATER CART |
| 52T060185 | INTEGRATED SYSTEMS TESTER |
| 52E230003 | SPACECRAFT SEQUENCE RE- CORDER |
| 52E230005 | ANALOG RECORDER |
| 52E230008 | BLOCKHOUSE POWER SUPPLY |

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968

REVISED 2 APRIL 1969

REVISED _____

PAGE 67

REPORT E217

MODEL 195B

2.4.4 ECS VALIDATION TEST - STDR B3-H71 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|----------------------|--|
| 52E230012 | SEQUENTIAL TESTING AND MONITOR CONSOLE |
| 52E230038 | SPACECRAFT POWER SUPPLY CONSOLE |
| 52E230068 | STE/STC CONSOLE |
| 52E440011 | PCM GROUND STATION |
| 52E440036 OR 257-100 | RATIOMETER |
| 52E440052 | T/M POWER SUPPLY - REMOTE DISPLAY |
| 52E440063 | T/M CNTL ASSY |
| 52E440065 | DISTR. SYSTEM TIMER |
| 52E040505 | SUBSTITUTE - LAB TRANSFER TUNNEL |
| 58E040506 | SUB-THERMO MECH LAB |

(E) TEST OUTLINE

(1) ECS - SYSTEM

- (A) SUIT CIRCUIT POSITIVE AND NEGATIVE LEAK TESTS
- (B) WATER MANAGEMENT SYSTEM LEAK TEST
- (C) LOW PRESSURE PRIMARY O₂ SYSTEM TEST
- (D) HIGH PRESSURE PRIMARY O₂ SYSTEM TEST
- (E) SECONDARY O₂ SYSTEM TESTS
- (F) ECS HANDLE ACTUATION FORCE TEST
- (G) FAN FLOW AND HI O₂ RATE CHECKS
- (H) PRIM AND SEC O₂ TRANSDUCER AND INDICATOR CALIBRATION VERIFICATION
- (I) INTEGRATED CABIN AND TUNNEL LEAK AND FUNCTIONAL TEST.

2.4.4 ECS VALIDATION TEST - STD R B3-H71 (CONTINUED)**(E) TEST OUTLINE (CONTINUED)****(1) (CONTINUED)****(J) CHECKOUT EVA HARDWARE INTERFACE WITH SPACECRAFT****(K) PERFORM HELIUM AND OXYGEN ORIFICE FLOW CHECKS****(L) PERFORM HELIUM SHUTOFF AND CHECK VALVES LEAK CHECK****(M) CREW TRANSFER UMBILICAL (CTUM) LEAKAGE AND FLOW CHECKS****(N) INTERFACE HEAT EXCHANGER VERIFICATION TEST USING THERMO MECHANICAL SUBSTITUTE.****2.4.5 PYROTECHNIC ELECTRICAL CHECK - STD R B3-H12****(A) TEST OBJECTIVES**

THE PYROTECHNIC ELECTRICAL CHECK SHALL CONSIST OF RESISTANCE AND STRAY VOLTAGE MEASUREMENTS OF SPACECRAFT PYROTECHNIC WIRING. TESTS ARE PERFORMED PRIOR TO AND DURING SYSTEMS ASSURANCE AND SIMULATED FLIGHT TESTS.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE ASSEMBLED SPACECRAFT SHALL BE VERTICAL AND MOUNTED ON THE SPACECRAFT HANDLING DOLLY IN THE WHITE ROOM.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|-----------------------------|
| 52E200014 | CABLES |
| 52E400004 | PYRO TESTER |
| 52E400017 | KIT ASS'Y - PYRO CONTINUITY |
| 52T060232 | JUMPER PLUGS |

DATE 31 MAY 1968PAGE 69

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.5 PYROTECHNIC ELECTRICAL CHECK-STDR B3-H12 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|---------------------|
| 52T060232 | CABLE |
| 58T202037 | CABLES |
| GCE 40-0003 | |

(E) TEST OUTLINE

- (1) AGE RESISTANCE CHECK
- (2) SHIELD CONTINUITY CHECK
- (3) FLIGHT BUNDLES RESISTANCE TESTS
- (4) CHECK CLOCKING OF PYRO BUNDLE PLUGS.
- (5) PERFORM STRAY VOLTAGE TEST (PERFORMED WITH S/C POWER ON.)

2.4.6 SYSTEMS ASSURANCE TESTS - STDR B3-H90

(A) TEST OBJECTIVES

THE SYSTEMS ASSURANCE TEST SHALL CONSIST OF AN OPERATIONAL TEST OF THE SPACECRAFT SYSTEMS. THIS TEST SHALL VERIFY INTERFACE CONNECTIONS (S/C SECTION INTERFACE NOW MATED) AND PERFORM END TO END FUNCTIONAL TESTING OF SYSTEMS.

(B) SYSTEMS SERVICED

- (1) COOLANT SYSTEMS
- (2) RCS PRESSURANT (3,000 PSIG GN₂)

DATE 31 MAY 1968PAGE 70

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.6 SYSTEMS ASSURANCE TESTS - STDR B3-H90 (CONTINUED)

(B) SYSTEMS SERVICED (CONTINUED)

(3) RCS REGULATED SYSTEM (300 PSIG GN₂)

(4) CAMERAS (GBQ #1 ONLY)

(5) ANALOG TAPE RECORDER (GBQ #1 ONLY)

(C) LOCATION AND CONFIGURATION

THE ASSEMBLED SPACECRAFT SHALL BE VERTICAL AND MOUNTED ON THE SPACECRAFT HANDLING DOLLY IN THE WHITE ROOM. THE SPACECRAFT SYSTEMS SHALL BE IN FLIGHT CONFIGURATION AS NEAR AS POSSIBLE. LAB VEH. ELECT. SUBSTITUTE AND T III M ELECTRICAL SUBSTITUTE CONNECTED.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--------------------------------|
| 52E180004 | COOLING & SERVICING UNIT |
| 52E180014 | ECS CHECKOUT CONSOLE |
| 52E180033 | DEMAND REG. TOOL |
| 52E180057 | HOSE ASS'Y |
| 52E180097 | HOSE ASS'Y |
| 52E180172-3 | REFRIGERATION UNIT |
| 52E180183 | PRESSURIZATION KIT |
| 52E190004 | S/C COMMUNICATION TEST STATION |
| 52E190007-1 | HEADSET (1 REQ'D) |
| 52E190007-9 | HEADSET (2 REQ'D) |
| 52E190012 | C-BAND PROBE ASS'Y |
| 52D190264 | C-BAND ANTENNA PROBE |

DATE 31 MAY 1968PAGE 71

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.6 SYSTEMS ASSURANCE TESTS - STD R B3-H90 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| * 52E190513-1 | FM CMD C/O STATION |
| 58E190514-25 | AMPLIFIER ASSEMBLY (2 REQ'D) |
| 52E200014 | CABLES |
| * 52E230003 | MISSION SEQUENCER MONITOR/ CNTRL UNIT |
| 52E230003 | SPACECRAFT SEQUENCE RECORDER |
| 52E230004 | SEQUENTIAL TESTING AND MONITOR CONSOLE |
| 52E230005 | ANALOG RECORDER |
| 52E230005 | EXTERNAL POWER CONTROL AND MONITOR CONSOLE |
| 52E230008 | BLOCKHOUSE POWER SUPPLY |
| 52E230012 | SEQUENTIAL CONTROL AND MONITOR CONSOLE |
| 52E230038 | SPACECRAFT POWER SUPPLY CONSOLE |
| 52E230068 | STE/STC CONSOLE |
| 52E230133 | RECORDER - SEQUENCE EVENTS |
| * 52E230114 | CABLES |
| 52E270003 | TEST CONSOLE, COMPUTER SYSTEMS |
| 52E270008 | IMU BREAKOUT BOX |
| 52E270009 | BOXES - TEST POINTS. ACSE |
| 52E270037 | TEST CONSOLE, ATTITUDE CONTROL SYSTEM ELECTRONICS |
| 52E270042 | TEST CONSOLE, INERTIAL MEASURING UNIT |

* UNMANNED ONLY

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968

PAGE 72

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.4.6 SYSTEMS ASSURANCE TESTS - STDR B3-H90 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| 52E270062 | RECORDER ASS'Y GUIDANCE AND CONTROL SYSTEM TEST |
| 52E270063 | CABINET ASS'Y - GUIDANCE AND CONTROL MONITORS |
| 52E270083 | ANCILLARY RACKS - ACSE |
| 52E270423 | RCS, SVLB |
| 58E270803 | COMPUTER DATA DISPLAY SYSTEM |
| 52E360013 | AIR DATA SYSTEMS TESTER |
| 52E400004 | PYRO TESTER |
| 52E400005 | SQUIB SIMULATOR CONSOLE |
| 52E420006 | PROPULSION SYSTEM C/O UNIT |
| 52E420007 | PROPULSION SYSTEM CONTROL UNIT (R3/132) |
| 52E420007 | PROPULSION SYSTEM MONITOR CONSOLE (R23/24) |
| 52E420009 | PRCPULSION SYSTEM ADAPTER KIT |
| 52E420144 | BOOST PUMP |
| 52E440011 | PCM GROUND STATION |
| 52E440033 | TEMPERATURE REF. HARNESS ASS'Y |
| 52E440044 | TEMPERATURE MONITOR SYSTEM |
| 52E440052 | POWER SUPPLY T/M - REMOTE DISPLAY |
| 52E440063 | T/M CONTROL CONSOLE |

MCDONNELLDATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 73

REVISED _____

REPORT E217

REVISED _____

MODEL 195B**2.4.6 SYSTEMS ASSURANCE TESTS - STDR B3-H90 (CONTINUED)****(D) AGE REQUIRED (CONTINUED)**

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|---|
| 52E440064 | LOAD, DC TO DC CONVERTER (2 REQ'D) |
| 52E440065 | DISTRIBUTION SYSTEM TIMER |
| 58D442054 | TELEMETRY JUNCTION BOX |
| 52T060191-1 | VOICE CHECK UNIT |
| 52T060231 | BATTERY CART |
| 52T060232 | CABLES |
| 52T060271-49 | RATE GYRO PWR MONITOR BOX |
| 52T060422-1 | CABLE, RCS THRUSTER CNL. |
| 52T060422-7 | CABLE, RCS AGE INTERCONNECT |
| * 52T060441-1 | T/M TRANSMITTER INPUT TEST BOX |
| 52T060441-11 | TEST BOX, DC/DC CONVERTER OUTPUT POWER (2 REQ'D) |
| 52T060441-13 | TEST BOX |
| 52T060441-15 | TEST BOX |
| 52T060441-17 | AGE 18 & 19 BREAKOUT BOX |
| 52T060441-19 | AGE 22 BREAKOUT BOX |
| 52T060441-21 | AGE 34, BREAKOUT BOX |
| 52T060441-23 | TEST BOX |
| 52T060441-25 | AGE 147, BREAKOUT BOX |
| 52T060441-41 | TEST BOX |
| * 52T060442-77 | CABLE FROM COMM. TO T/M J/B |

* UNMANNED ONLY

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968PAGE 74REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.4.6 SYSTEMS ASSURANCE TESTS - STDR B3-H90 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|-------------------------------------|
| * 52T060442-79 | CABLE FROM COMM. TO T/M J/B |
| 52T060442-149 | TEST BOX |
| 52T060442-151 | TEST BOX |
| * 58T060001 | F/M TELEMETRY GROUND STATION |
| * 58T060014 | CABLES |
| * 58T060014-3 | F/M HARDLINE |
| 58T060023 | CABLES |
| * 58T060023 | .05G/BARO SIM & PALLET LOAD SIM. |
| * 58T06044-1 | AGE 173, BREAKOUT BOX |
| * 58T06044-7 | PCM TAPE RECORDER J3 TEST BOX |
| * 58T06044-9 | SEP. ENABLE AGE BOX |
| 58D202037 | CABLES |
| 58D202043 | CABLES |
| * 58D042004-1 | SOUND PRESSURE LEVEL CHAMBER |
| * 58D042004-3 | CABIN MICROPHONE ADAPTER PLATE |
| 559100 | RECOVERY INTERPHONE |
| GFE | HELMET ASSEMBLY (2 REQ'D) |
| 102779 | CABLE, RCS AGE PWR |
| N/A | LAB SIMULATOR |
| N/A | TITAN III M SIMULATOR |
| * 58E040501 | LV/L SIMULATOR |
| * UNMANNED ONLY | |

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 75

REVISED 2 APRIL 1969

REPORT E217

REVISED _____

MODEL 195B

2.4.6 SYSTEMS ASSURANCE TESTS - STD R B3-H90 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| N/A | ATTENUATORS, COAX CABLES & FITTINGS |
| N/A | THERMOSTAT COOLING PROBE |
| FAL29 | ABSOLUTE PRESSURE GAGE (2 REQ'D) |
| HP 428 | CURRENT PROBE (DC) |
| MODEL 803B | FLUKEMETER |
| MODEL 555 | OSCILLOSCOPE, TEKTRONIX (2 REQ'D) |
| C12 | SCOPE CAMERA AND ADAPTER (2 REQ'D) |
| 18000-100 | POWER SUPPLY - AIR DATA SYSTEM TESTER |
| * MODEL 328 | BALLANTINE RMS METER |

2.4.6.1 TEST OUTLINE

(A) ELECTRICAL TEST OUTLINE

- (1) VERIFY S/C CONFORMS TO SINGLE POINT GND DESIGN.
- (2) S/C POWER UP AND VOLTAGE DISTRIBUTION VERIFICATION.
- (3) T-III M AND LABORATORY VEHICLE INTERFACE CHECKS USING BOOSTER SIMULATOR AND LABORATORY SIMULATOR.
- (4) COOLANT ELECTRICAL TEST (VERIFY COOLANT PUMPS IN OPERATION).
- (5) LIGHTING CHECKS
- (6) FEEDER LINE RESISTANCE MEASUREMENTS

* UNMANNED ONLY

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968

REVISED 2 APRIL 1969

REVISED _____

PAGE 76

REPORT E217

MODEL 195B

2.4.6.1 TEST OUTLINE (CONTINUED)

(A) ELECTRICAL TEST OUTLINE (CONTINUED)

(6) (CONTINUED)

(A) IGS

(B) ADAPTER BATTERY CHECKS

(C) MAIN BATTERY CHECKS

(7) BAROSTAT OPERATIONAL CHECKS

(A) AVE 1-4

(B) AVE 1 PALLET

(B) INSTRUMENTATION

(1) TEST POINT VOLTAGE CHECK

(2) INSTRUMENTATION SYSTEM CHECK, CHECK REGULATED VOLTAGE, INTERFACE, STATIC PARAMETERS AND ALL PARAMETERS EXCITED BY THE INSTRUMENTATION SYSTEM.

(3) CHECKOUT GB/LAB VEHICLE INTERFACE USING LAB SIMULATOR (ON ORBIT MONITOR SYSTEM OF GEMINI B CRITICAL PARAMETERS, VERIFY RECEPTION OF 5.12 KBPS WAVETRAIN TO LAB VEHICLE SGLS BASE BAND AND INSTRUMENTATION CONTROLS FROM LAB VEHICLE ON AVE #2 - 4).

(4) ADAPTER STRUCTURAL TEMPERATURE AND VIBRATION SURVEY (GBQ #1 ONLY).

(5) LOCAL STATIC PRESSURE SYSTEM CALIBRATION (GBQ #1 ONLY).

DATE 2 APRIL 1969

ST. LOUIS, MISSOURI

PAGE 76A

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.6.1 TEST OUTLINE (CONTINUED)

(B) INSTRUMENTATION (CONTINUED)

(6) OPERATIONAL CHECK OF THE FM INSTRUMENTATION SYSTEM (GBQ #1 ONLY).

(7) DATA EVALUATION OF ANALOG TAPE RECORDER AND CAMERAS (GBQ #1 ONLY).

(C) COMMUNICATIONS TEST

(1) HF XMTR - RCVR

(A) TEST POINT VOLTAGE CHECK

(B) RECEIVER SENSITIVITY TEST

(C) RECEIVER FREQUENCY AT MAXIMUM RESPONSE TEST

(D) XMTR POWER AND FREQUENCY TEST

(E) VERIFY VOICE QUALITY

(F) HF/DF TEST

(2) VHF XMTR - RCVR (2)

(A) TEST POINT VOLTAGE CHECK

(B) RECEIVER SENSITIVITY TEST

(C) RECEIVER FREQUENCY AT MAXIMUM RESPONSE TEST

(D) XMTR POWER AND FREQUENCY TEST

(E) VERIFY VOICE QUALITY

(3) VHF RECOVERY BEACON

(A) TEST POINT VOLTAGE CHECK

(B) MEASURE FREQUENCY AND PWR

(C) MODULATION CHARACTERISTICS

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968

PAGE 77

REVISED 2 APRIL 1969

REPORT E217

REVISED _____

MODEL 195B

2.4.6.1 TEST OUTLINE (CONTINUED)

(C) COMMUNICATIONS TEST (CONTINUED)

(4) C-BAND BEACON

- (A) TEST POINT VOLTAGE CHECK
- (B) RECEIVER SENSITIVITY TEST
- (C) BAND WIDTH
- (D) CENTER FREQUENCY
- (E) SLOT TOLERANCE
- (F) MEASURE XMTR PWR AND FREQUENCY
- (G) PULSE WIDTH AND PRF
- (H) PHASE SHIFTER OPERATION

(5) TM XMTR (GBQ #1 ONLY)

- (A) TEST POINT VOLTAGE TEST
- (B) PWR, FREQUENCY AND MODULATION

(6) CMD RECEIVER (GBQ #1 ONLY)

- (A) CENTER FREQUENCY CHECK
- (B) RECEIVER SENSITIVITY AND BANDWIDTH
- (C) RELAY RESPONSE

(7) LAB INTERFACE USING LAB SIMULATOR

- (A) VERIFY SIGNAL QUALITY
- (B) VERIFY VHF SWITCHING

(8) TRANSFER UMBILICAL

- (A) VERIFY VOICE QUALITY

DATE 31 MAY 1968
REVISED 2 APRIL 1969
REVISED _____

ST. LOUIS, MISSOURI

PAGE 78
REPORT E217
MODEL 195B

2.4.6.1 TEST OUTLINE (CONTINUED)

(C) COMMUNICATIONS TEST (CONTINUED)

(9) PERSONNEL SURVIVAL VHF TRANSCEIVER INTERFACE
VERIFICATION

(10) VOICE CONTROL CENTER

(11) VCC INTERFACE WITH PSA

(12) PSA INTERFACE

(A) VERIFY VOICE QUALITY

(D) RCS RING A & B - HIGH AND LOW PRESSURE TRANSDUCERS TESTS, PROPELLANT MOTOR VALVE FUNCTIONAL TEST, TCA FLOW AND VALVE TIMING TEST. IN ADDITION, RCS HEATER TEST, SOURCE AND REGULATED PRESSURE SYSTEMS WILL BE PRESSURIZED TO SYSTEM OPERATING PRESSURE, AND WILL REMAIN SO PRESSURIZED THROUGHOUT THE REMAINING PHASE II TESTS.

(E) INERTIAL MEASUREMENT UNIT (IMU) TEST

(1) IMU - POWER UP AND VOLTAGE TESTS

(A) IMU TURN-ON SEQUENCE

(B) FAST HEAT

(C) SPIN MOTOR EXCITATION

(D) STAB LOOP CLOSURE

(E) CHECK AC AND DC VOLTAGES AND FREQUENCY

(F) PLUS AND MINUS X, Y AND Z DELTA V

(2) IGS PLATFORM MALFUNCTION DETECTOR TEST

DATE 31 MAY 1968PAGE 79REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.4.6.1 TEST OUTLINE (CONTINUED)

(E) INERTIAL MEASUREMENT UNIT (IMU) TEST (CONTINUED)

- (3) SLIP RING WIPE TEST
- (4) CAGE MODE TEST (SEF AND BEF)
- (5) ORBIT RATE MODE TEST
- (6) GIMBAL FLIP TEST
- (7) MANUAL TORQUING OF IMU GIMBALS
- (8) GYRO COMPASSING (SEF AND BEF) USING ORBIT ALIGN
TECHNIQUES

(F) IMU INTERFACE TEST

- (1) IMU-ATTITUDE DISPLAY GROUP INTERFACE
- (2) INTERFACE CHECK BETWEEN LAB AND G & C USING LAB
SIMULATOR

(G) ATTITUDE CONTROL ELECTRONICS GROUP (ACEG) TESTS

- (1) ACEG INVERTER OPERATION
- (2) PULSE MODE TEST
VERIFY: ATT H/CNTL - ACE PULSE GENERATOR
- (3) RE-ENTRY (RATE COMMAND) MODE TEST
VERIFY: RATE AND H/CNTL SWITCHING THRESHOLDS
(RCS) H/CNTL DIODE W/B CHECK
- (4) RATE COMMAND MODE TEST
VERIFY: H/CNTL TELEMETRY CAL CHECK

DATE 31 MAY 1968
REVISED _____
REVISED _____

MCDONNELL

ST. LOUIS, MISSOURI

PAGE 80
REPORT E217
MODEL 195B

2.4.6.1 TEST OUTLINE (CONTINUED)

(G) ATTITUDE CONTROL ELECTRONICS GROUP (ACEG) TESTS
(CONTINUED)

(4) (CONTINUED)

VERIFY: PRI AND SEC RATE GYRO OPERATION, RATE
GYRO/ACE ADG/TM INTERFACE, ACE PRI AND
SEC POWER AND LOGIC, ACE SWITCHING LEVELS
AND DEADBAND (RCS), ARC SUPPRESSION FOR
RCS JETS (RING A & B), DIODE PACKAGE
SUPPRESSOR CHECK, RATE GYRO RUN UP/RUN
DOWN TIME. (PRI & SEC)

(5) DIRECT MODE TEST

VERIFY: ATT. H/CNTL - ACE - RCS INTERFACE
RCS/TM INTERFACE

(6) PACS FUNCTIONAL VALIDATION TEST

- (A) ACE - PATE INTERFACE
- (B) PATE - THRUSTERS INTERFACE
- (C) PACS - POWER AND LOGIC CONTROL CIRCUITS
- (D) ABORT HANDLE CONTROL ON PACS OPERATION

(7) ACEG PLATFORM MODE TEST

- (A) ACE - IMU INTERFACE
- (B) ACE SWITCHING LEVEL WITH IMU AND RATE GYRO
INPUTS.

(8) ACEG COMPUTER VALIDATION TEST

- (A) ACE - COMPUTER INTERFACE TEST
- (B) ACE - SWITCHING LEVEL WITH COMPUTER AND
R/G INPUTS

2.4.6.1 TEST OUTLINE (CONTINUED)(G) ATTITUDE CONTROL ELECTRONICS GROUP (ACEG) TESTS
(CONTINUED)

(9) ACTS FUNCTIONAL VALIDATION TEST

(A) ATT. H/CNIL - LAB INTERFACE CHECK

(B) ACTS MODE SELECT/LAB INTERFACE CHECK

(H) COMPUTER TESTS (DIAGNOSTIC TEST SOFTWARE)

(1) POWER APPLICATION AND VOLTAGE CHECKS

(2) MALFUNCTION DETECTOR CHECK

(3) DISCRETE TEST

(A) CHECK MODE SWITCH SOFTWARE CONTROL DISCRETES

(4) COMPUTER INTERFACE CHECK

(A) DAS TEST

(1) VERIFY PROPER TRANSFER OF COMPUTER DATA
TO TELEMETRY SYSTEM

(B) LAUNCH DISCRETE TEST

(C) ATM TEST

(1) VERIFY POWER ATM OPERATION AND TRANSFER
OF DATA.

(D) MDIU TEST

(1) VERIFY MDIU OPERATION AND CORRECT
INSERTION OF DATA

(E) IVI TEST

(1) VERIFY COMPUTER DRIVE AND MANUAL OPERA-
TION OF IVI'S.

(F) TRS TEST

(1) CHECK PROPER READING AND UPDATING OF
TRS BY COMPUTER.

DATE 31 MAY 1968PAGE 82REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.4.6.1 TEST OUTLINE (CONTINUED)

(H) (4) (CONTINUED)

(G) FDI TEST

- (1) CHECK POLARITY AND MAGNITUDE OF COMPUTER OUTPUTS AND RESULTING FDI READINGS.

(H) GIA TEST

- (1) VERIFY TRANSFER OF DIGITAL DATA AND STEERING SIGNALS TO T-III M VIA THE GIA AND INTERFACE CABLING TO BIFS.
- (2) VERIFY GIA TO FDI INTERFACE.

(I) AUXILIARY COMPUTER POWER UNIT (A.C.P.U.)
FUNCTION TEST

- (1) VERIFY COMPUTER SELF CHECK OPERATION.
- (2) VERIFY PROPER COMPUTER SHUTDOWN UPON COMMAND OR WHEN LOSS OF POWER OCCURS.

(I) IGS TEST

(1) IMU GIMBAL ANGLE TEST

- (A) PERFORM GIMBAL ANGLE BIAS AND ACCURACY TEST.

(2) IMU ACCELEROMETER TEST

- (A) VERIFY IMU ACCELEROMETER DATA TO COMPUTER AND ACCELEROMETER MATRIX.

(3) INERTIAL MODE TEST

- (A) OPEN LOOP NORTH REFERENCE ALIGNMENT

- (1) GYRO DRIFT PARAMETERS
- (2) ACCEL BIAS
- (3) ACCEL SCALE FACTOR
- (4) ACCEL MISALIGNMENT (ORTHOGONALITY)

DATE 31 MAY 1968
REVISED 2 APRIL 1969
REVISED _____

ST. LOUIS, MISSOURI

PAGE 83
REPORT E217
MODEL 195B2.4.6.1 TEST OUTLINE (CONTINUED)

(J) LAUNCH THRU IMPACT - SEQUENTIAL SYSTEM CHECKOUT USING
SQUIB BUS NO. 1:

*(1) L/H PALLET

*(2) L/H AND R/H PALLET

(K) ABORT SYSTEM CHECKS - SEQUENTIAL SYSTEM CHECKOUT USING
SQUIB BUS NO. 1:

*(1) L/H PALLET

*(2) L/H AND R/H PALLET

(L) LAUNCH THRU IMPACT - SEQUENTIAL SYSTEM CHECKOUT USING
SQUIB BUS NO. 2:

*(1) R/H PALLET

*(2) L/H AND R/H PALLET

(M) ABORT SYSTEM CHECKS - SEQUENTIAL SYSTEM CHECKOUT USING
SQUIB BUS NO. 2:

*(1) R/H PALLET

*(2) L/H AND R/H PALLET

(N) VERIFY THE TIME REFERENCE SYSTEM AND PERFORM ACCURACY
TESTS.

(1) EVENT TIMER START, RESET AND RUNDOWN.

(2) ELECTRONIC TIMER RESTART AND OPERATION.

2.4.7 SIMULATED FLIGHT TEST STDR B3-H91

(A) TEST OBJECTIVES

SIMULATED FLIGHT WILL DEMONSTRATE THE OPERATIONAL
MISSION READINESS OF SYSTEMS. SEQUENTIAL SYSTEM

* UNMANNED ONLY

DATE 31 MAY 1968
REVISED 2 APRIL 1969
REVISED _____

MCDONNELL

ST. LOUIS, MISSOURI

PAGE 84
REPORT E217
MODEL 195B

2.4.7 SIMULATED FLIGHT TEST STDR B3-H9L (CONTINUED)

(A) TEST OBJECTIVES (CONTINUED)

REDUNDANCIES SHALL HAVE BEEN VERIFIED PRIOR TO EXERCISING SYSTEMS IN RELATED FLIGHT SEQUENCES. THE TEST WILL CONSIST OF TWO PARTS. PART I IS FOR GBQ #1 ONLY, PART II IS FOR GBQ 1 AND AVE 2 THRU AVE 4. PARAGRAPH 2.4.7 WILL BE UTILIZED FOR BOTH PARTS (I AND II).

(B) SYSTEMS SERVICED

- (1) COOLANT SYSTEMS
- (2) RCS PRESSURANT (3000 PSIG GN₂)
- (3) ANALOG TAPE RECORDER (GBQ #1 ONLY)
- (4) CAMERAS (GBQ #1 ONLY)

(C) LOCATION AND CONFIGURATION

THE ASSEMBLED SPACECRAFT SHALL BE MOUNTED ON THE SPACECRAFT HANDLING DOLLY IN THE WHITE ROOM AND VERTICALLY LEVELED.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|------------------------------------|
| 52E180004 | COOLING AND SERVICING UNIT |
| 52E180014 | ECS CHECKOUT UNIT |
| 52E180033 | TOOL DEMAND REGULATOR |
| 52E180057 | HOSE ASSY |
| 52E180076 | ECS CHECKOUT CONSOLE |
| 52E180097 | HOSE ASSY |
| 52E180172-3 | REFRIGERATION UNIT |
| 52E180183 | PRESSURIZATION KIT |
| 52E190004 | S/C COMMUNICATIONS TEST STATION |

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 85

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.7 SIMULATED FLIGHT TEST - STDR B3-H91 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| 52E190007-1 | HEADSET (1 REQ'D) |
| 52E190007-9 | HEADSET (2 REQ'D) |
| 52E190012 | C-BAND PROBE ASSY |
| * 58E190513-1 | FM CMD C/O STATION |
| 58E190514-25 | AMPLIFIER ASSEMBLY (2 REQ'D) |
| 52E200014 | CABLES |
| 52E230003 | SEQUENCE RECORDER |
| * 52E230003 | MISSION SEQUENCER MONITOR/ CNTRL UNIT |
| 52E230004 | CONSOLE, SEQUENTIAL TEST AND MONITOR |
| 52E230005 | EXTERNAL POWER CONTROL AND MONITOR |
| 52E230005 | ANALOG RECORDER |
| 52E230008 | BLOCKHOUSE POWER SUPPLY |
| 52E230012 | CONSOLE, SEQUENTIAL CONTROL AND MONITOR |
| 52E230038 | SPACECRAFT POWER SUPPLY |
| 52E230068 | STE/STC CONSOLE |
| 52E230133 | RECORDER - SEQUENCE EVENTS |
| * 52E230114 | CABLES |
| 52E270003 | TEST CONSOLE - COMPUTER, SYSTEMS |
| 52E270023 | MEMORY LOADER |

* UNMANNED ONLY

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 86

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.4.7 SIMULATED FLIGHT TEST STDR B3-H91 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|---|
| 52E270037 | TEST CONSOLE, ATTITUDE CONTROL SYSTEM ELECTRONICS |
| 52E270039 | SIMULATOR S/C GUIDANCE AND CONTROL SYSTEMS |
| 52E270042 | TEST CONSOLE - INERTIAL MEASURING UNIT |
| 52E270062 | RECORDER ASSY - GUIDANCE AND CONTROL SYSTEM TEST |
| 52E270063 | CABINET ASSY - GUIDANCE AND CONTROL MONITORS |
| 52E270094 | LOADER VERIFIER UNIT TESTER (FOR ATM) |
| 52E270423 | RCS, SVIB |
| 52E270803 | CDDS |
| 52E350013 | AIR DATA SYSTEM TESTER |
| 52E400004 | PYRO TESTER |
| 52E400005 | SQUIB SIMULATOR |
| 52E420007 | PROPULSION SYSTEM MONITOR CONSOLE (R23/24) |
| 52E420013-3 | N ₂ PRESSURIZATION UNIT |
| 52E420182-1 | TCA FIRING VERIFICATION KIT |
| 52E440011 | PCM GROUND STATION |
| 52E440033 | TEMPERATURE REF. HARNESS ASSY |
| 52E440044 | TEMPERATURE MONITOR SYSTEM |
| 52E440052 | POWER SUPPLY T/M - REMOTE DISPLAY |

DATE 31 MAY 1968PAGE 87

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.7 SIMULATED FLIGHT TEST-STDR B3-H91 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|---|
| 52E440063 | T/M CONTROL CONSOLE |
| 52E440064 | LOAD - DC TO DC CONVERTER (2 REQ'D) |
| 52E440065 | DISTRIBUTION SYSTEM TIMER |
| 52T060181-5 | LEAK TESTER |
| 52T060181-7 | DEMAND REG. TOOL |
| 52T060185 | INTEGRATED SYSTEM TESTER |
| 52T060191-1 | VOICE CHECK UNIT |
| 52T060231 | POWER CONTROL RELAY PANEL |
| 52T060231 | BATTERY CART |
| 52T060232 | CABLES |
| * 52T060441-1 | T/M TRANSMITTER INPUT TEST BOX |
| 52T060441-11 | TEST BOX, DC/DC CONVERTER OUTPUT POWER (2 REQ'D) |
| 52T060441-17 | AGE 18 & 19 BREAKOUT BOX |
| 52T060441-19 | AGE 22, BREAKOUT BOX |
| 52T060441-21 | AGE 34, BREAKOUT BOX |
| 52T060441-23 | TEST BOX |
| 52T060441-25 | AGE 147, BREAKOUT BOX |
| 52T060442-41 | TEST BOX |
| * 52T060442-77 | CABLE FROM COMM. TO T/M J/B |
| * 52T060442-79 | CABLE FROM COMM. TO T/M J/B |
| * UNMANNED ONLY | |

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968PAGE 88REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.4.7 SIMULATED FLIGHT TEST-STDR B3-H91 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--------------------------------------|
| 52T060442-149 | TEST BOX |
| 52T060442-151 | TEST BOX |
| * 58T060001 | F/M TELEMETRY GROUND STATION |
| * 58T06014-3 | F/M HARDLINE |
| * 58T060023 | .05 G/BARO SIMULATOR |
| * 58T060044-1 | AGE 173, BREAKOUT BOX |
| * 58T060044-7 | PCM TAPE RECORDER J3 TEST BOX |
| 58T060044-9 | SEP ENABLE AGE BOX |
| 58T060097 | TRANSIENT DETECTOR (6) |
| 52-050484 | CABLES |
| 52-050857 | BREAKOUT BOXES |
| * 58D042004-1 | SOUND PRESSURE LEVEL CHAMBER |
| * 58D042004-3 | CABIN MICROPHONE ADAFTER PLATE |
| 58D042012-1 | PLATFORM PHASE INDICATOR CHECKOUT |
| 58D202037 | CABLES |
| 58D202043 | CABLES |
| 58D442054 | TELEMETRY JUNCTION BOX |
| N/A | LAB SIMULATOR |
| N/A | TITAN III M SIMULATOR |
| FAL29 | ABSOLUTE PRESSURE GAGE (2 REQ'D) |
| * 58E040501 | LV/L SIMULATOR |
| * UNMANNED ONLY | |

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 89REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B**2.4.7 SIMULATED FLIGHT TEST - STD R B3-H91 (CONTINUED)****(D) AGE REQUIRED (CONTINUED)**

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| MODEL 803B | FLUKE METER |
| MODEL 555 | OSCILLOSCOPE, TEKTRONIX (2 REQ'D) |
| 18000-100 | POWER SUPPLY - AIR DATA SYSTEM TESTER |
| C12 | SCOPE CAMERA AND ADAPTER (2 REQ'D) |
| GFE | HELMET ASSEMBLY (2 REQ'D) |
| N/A | HEAT GUN |
| * MODEL 328 | BALLANTINE RMS METER |

VHF TEST ANTENNAS, ATTENUATORS, COAX CABLES AND FITTINGS.

2.4.7.1 SIMULATED FLIGHT TEST - PART I - STD R B3-H91 (GBQ #1 ONLY)**(A) TEST OBJECTIVES**

THIS TEST SHALL VALIDATE SPACECRAFT SYSTEMS BEFORE PERFORMING PART II. A BRIEF OPERATIONAL TEST SHALL BE PERFORMED ON THE SYSTEMS.

(B) TEST OUTLINE**(1) LAUNCH THRU IMPACT - SEQUENTIAL SYSTEM CHECKOUT**

USING SQUIB BUS NO. 1:

(A) L/H PALLET

(B) L/H AND R/H PALLET

(2) ABORT SYSTEM CHECKS - SEQUENTIAL SYSTEM CHECKOUT

USING SQUIB BUS NO. 1:

(A) L/H PALLET

(B) L/H AND R/H PALLET

* UNMANNED ONLY

DATE 31 MAY 1968PAGE 90

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.4.7.1 SIMULATED FLIGHT TEST - PART I - STDR B3-H91 (GBQ #1 ONLY)
(CONTINUED)

(P) TEST OUTLINE (CONTINUED)

(3) LAUNCH THRU IMPACT - SEQUENTIAL SYSTEM CHECKOUT
USING SQUIB BUS NO. 2:

(A) R/H PALLET

(B) L/H AND R/H PALLET

(4) ABORT SYSTEM CHECKS - SEQUENTIAL SYSTEM CHECKOUT
USING SQUIB BUS NO. 2:

(A) R/H PALLET

(B) L/H AND R/H PALLET

(5) COMMUNICATION

(A) HF XMTR - RCVR - DETERMINE XMTR POWER AND
FREQUENCY, DETERMINE RCVR SENSITIVITY AND
FREQUENCY.

(B) VHF XMTR - RCVR - DETERMINE XMTR POWER AND
FREQUENCY, DETERMINE RCVR SENSITIVITY AND
FREQUENCY.

(C) UHF - RECOVERY BEACON - DETERMINE POWER AND
FREQUENCY.

(D) C-BAND BCN - DETERMINE XMTR POWER AND FRE-
QUENCY. DETERMINE RECEIVER SENSITIVITY AND
FREQUENCY.

(E) TELEMETRY - DETERMINE POWER AND FREQUENCY.

(F) CMD - DETERMINE FREQUENCY AND SENSITIVITY.

DATE 31 MAY 1968
REVISED 2 APRIL 1969
REVISED _____PAGE 91
REPORT E217
MODEL 195B

2.4.7.1 SIMULATED FLIGHT TEST - PART I - STDR B3-H91 (GBQ #1 ONLY)
(CONTINUED)

(B) TEST OUTLINE (CONTINUED)

(6) INSTRUMENTATION

- (A) DETERMINE TEST AREA AMBIENT PRESSURE AND TEMPERATURE.
- (B) PERFORM AN OPERATIONAL CHECK OF THE PCM, FM/FM AND CAMERA INSTRUMENTATION SYSTEMS.
- (C) RUN A PARAMETER SURVEY.
- (D) PERFORM A DATA RUN, PLAYBACK ON BOARD TAPES AND EVALUATE THE DATA; PROCESS AND EVALUATE FILM.

(7) G & C

- (A) PERFORM OPERATIONAL AND INTERFACE TESTS ON THE FOLLOWING SYSTEMS: IMU, COMPUTER, ACEG SYSTEM, AND THEIR PERIPHERAL EQUIPMENT.

2.4.7.2 SIMULATED FLIGHT TEST - PART II - STDR B3-H91

(A) TEST OUTLINE

- (1) RUN #1 - NORMAL SIMULATED FLIGHT (LAUNCH THRU IMPACT) INCLUDES COMPUTER TEST PROGRAMS FOR THE FOLLOWING MODES, (ASCENT, ORBIT, RE-ENTRY), SQUIB SIMULATORS INSTALLED FOR THE RUN (HESS'S).
- (2) RUN #2 - ABORT SIMULATED FLIGHT INCLUDES MODE A ABORT INITIATED PRIOR TO LIFT-OFF TO SIMULTANEOUSLY SIMULATE CONDITIONS FOR THE SEQUENTIAL AND PACS SYSTEM. HESS'S SHALL BE USED AS SQUIB SIMULATORS AND INSTALLED IN THE SQUIB SIMULATOR RACK WITH UMBILICAL EJECTED.

DATE 31 MAY 1968
REVISED 2 APRIL 1969
REVISED _____

ST. LOUIS, MISSOURI

PAGE 92
REPORT E217
MODEL 1.55B2.4.7.2 SIMULATED FLIGHT TEST - PART II - STDR B3-H91 (CONTINUED)

(A) TEST OUTLINE (CONTINUED)

- (3) RUN #3 - ABORT SIMULATED FLIGHT (ABORT INITIATED AT TIME DURING FLIGHT TO SIMULTANEOUSLY SIMULATE MODE B ABORT CONDITIONS FOR THE SEQUENTIAL SYSTEM). HESS'S SHALL BE USED AS SQUIB SIMULATORS AND INSTALLED IN SQUIB SIMULATOR RACK. EMERGENCY DROGUE CHUTE DEPLOY INITIATED DURING LANDING PHASE (SIMULATES EMERGENCY LANDING CONDITIONS), UMBILICALS AND MOL & LV SIMULATORS CONNECTED. SIMULATORS SHALL BE DISCONNECTED AT APPROPRIATE TIMES.
- (4) RUN #4 - NORMAL SIMULATED FLIGHT (LAUNCH THRU IMPACT). MINIMUM AGE CONNECTED, UMBILICAL DROP AS PART OF COUNTDOWN, LAUNCH VEHICLE ELECTRICAL INTERFACE SUBSTITUTE DISCONNECTED AT ORBITING VEHICLE SEP. COMPUTER IN STANDBY MODE, IMU IN INERTIAL MODE. HESS'S SHALL BE USED AS SQUIB SIMULATORS AND INSTALLED IN RACK. MOL/LV SIMULATOR CONNECTED AND DISCONNECTED PER MISSION PROFILE.
- (5) RUN #5 - EMI - NORMAL SIMULATED FLIGHT (LAUNCH THRU IMPACT). MINIMUM SYSTEMS AGE, ADDITIONAL EMI AGE. DEMONSTRATE SAFETY MARGINS OF CRITICAL CIRCUITS (AVE #1 AND AVE #2 ONLY).
- (6) TCA INTERNAL LEAKAGE CHECK (AVE #1 ONLY).
- (7) VERIFY INTEGRITY OF RCS TCA ELECTRICAL WIRING AFTER LOADBANKS ARE REMOVED AND S/C W/B'S are CONNECTED. (AVE #1 ONLY)

2.4.8 GUIDANCE AND CONTROL (G & C) PHASING TEST - STDR B3-H52

(A) TEST OBJECTIVES

THIS TEST WILL VERIFY THAT THE IGS AND FLIGHT CONTROL SYSTEM PROVIDES PROPER OUTPUT SIGNAL PHASING FOR ACTUAL SPACECRAFT MOVEMENT AND ATTITUDE ERRORS. END-TO-END PHASING VERIFICATION SHALL BE ACCOMPLISHED BY PHYSICALLY MOVING THE SPACECRAFT (PHYSICAL RATES AND ATTITUDE ERRORS) WHILE THE SPACECRAFT IS MOUNTED IN THE HORIZONTAL HANDLING TRAILER. COLD GAS FIRING OF RCS THRUSTERS WILL INDICATE CORRECT PHASING.

(B) SYSTEMS SERVICED

NONE

(C) LOCATION AND CONFIGURATION

THE ASSEMBLED SPACECRAFT SHALL BE HORIZONTAL AND MOUNTED ON THE HORIZONTAL TRANSPORTATION TRAILER.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|----------------------------|
| 52E190004 | COMM. GROUND STATION |
| 52E200014 | CABLES |
| 52E230003 | S/C SEQUENCE RECORDER |
| 52E230005 | EXT. PWR. CNTL & MON. SYS. |
| 52E230008 | BLOCKHOUSE PWR SUPPLY |
| 52E230012 | SEQ CONTROL & MON. CONSOLE |
| 52E230038 | S/C PWR SUPPLY CONSOLE |

DATE 31 MAY 1968PAGE 94

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.8 GUIDANCE AND CONTROL (G & C) PHASING TEST - STDR B3-H52
(CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|------------------------------------|
| 52E230068 | STE/STC CONSOLE |
| 52E270062 | RECORDER ASS'Y G & C SYS TEST |
| 52E270063 | CABINET ASS'Y G & C MONITOR |
| 58E270803 | CDDS |
| 52E420013-3 | N ₂ PRESSURIZATION UNIT |
| 52E420182-1 | TCA FIRING VERIFICATION KIT |
| 52E440011 | PCM TM GROUND STATION |
| 52E440052 | POWER SUPPLY - TM REMOTE |
| 52E440063 | CONSOLE - TM CONTROL |
| 52E440065 | DISTRIBUTION SYSTEM TIMER |
| 52T060231 | BATTERY CARTS |
| 52T060232 | CABLES |
| 52T060441-7 | AGE 18 & 19, BREAKOUT BOX |
| 52T060441-17 | TEST CABLES |
| * 52T060442-77 | COAX FROM COMM TO T/M J/B |
| * 52T060442-79 | COAX FROM COMM. TO T/M J/B |
| 52T060442-149 | TEST CABLES |
| 58D202037 | CABLES |
| 58D442054 | COAX JUNCTION BCX |
| 803B | FLUKEMETER |
| 555 | OSCILLOSCOPE, TEKTRONIX |

* UNMANNED ONLY

DATE 31 MAY 1968PAGE 95REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B

2.4.8 GUIDANCE AND CONTROL (G & C) PHASING TEST - STDR B3-H52
(CONTINUED)

(E) TEST OUTLINE

- (1) PHYSICALLY MOVE THE SPACECRAFT IN THE PITCH, ROLL AND YAW AXES (ONE AT A TIME) AND VERIFY THE RATE OF MOVEMENT CAUSES CORRECT THRUSTER FIRE FOR EACH AXIS. VERIFY BY FEELING COLD GAS EXITING FROM THE THRUSTERS.
- (2) TCA INTERNAL LEAKAGE CHECK (AVE 2-4)
- (3) VERIFY INSTRUMENTATION ACCELEROMETER POLARITY CHECK (GBQ ONLY)
- (4) INDUCE PHYSICAL SPACECRAFT ATTITUDE ERRORS (POSITIVE AND NEGATIVE) IN THE PITCH, ROLL AND YAW AXES (ONE AT A TIME). VERIFY SPACECRAFT LADDER OUTPUTS TO LAUNCH VEHICLE AND ATTITUDE DISPLAY INDICATIONS FOR EACH ATTITUDE ERROR (COMPUTER IN ASCENT MODE). CHECK FOR CHANNEL CROSSTALK.

2.4.9 ALTITUDE CHAMBER TEST - STDR B3-H93

(A) TEST OBJECTIVES

ALTITUDE CHAMBER TESTS WILL VALIDATE PERSONNEL SENSITIVE ELEMENTS OF THE ECS SYSTEM DURING A SIMULATED ALTITUDE ENVIRONMENT AND INTERPOSE MAN IN THE LOOP TO PROVIDE A LOAD ON THE ECS AND TO MAKE A QUALITATIVE EVALUATION OF THE ECS OPERATION. ONE UNMANNED ALTITUDE RUN AND ONE MANNED ALTITUDE RUN TO 150K FEET SHALL BE PERFORMED. ONLY THOSE SYSTEMS REQUIRED FOR ECS SUPPORT OR SAFETY WILL BE POWERED UP.

DATE 31 MAY 1968PAGE 96REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B**2.4.9 ALTITUDE CHAMBER TEST - STDR B3-H93 (CONTINUED)****(B) SYSTEMS SERVICED**

- (1) COOLANT SYSTEMS
- (2) ECS PRIMARY O₂ - (2000 PSIG GOX)
- (3) ECS SECONDARY O₂ - (2000 PSIG GOX)
- (4) RCS PRESSURANT (3000 PSIG GN₂)
- (5) RCS REGULATED PRESSURE (3000 PSIG GN₂)
- (6) WATER SYSTEM
- (7) ANALOG TAPE RECORDER (GBQ #1 ONLY)
- (8) CAMERAS (GBQ #1 ONLY)

(C) LOCATION AND CONFIGURATION

THE ASSEMBLED SPACECRAFT SHALL BE HORIZONTALLY MOUNTED ON THE SPACECRAFT HORIZONTAL TRANSPORT TRAILER LOCATED IN THE ALTITUDE CHAMBER. ALL SPACECRAFT SYSTEMS SHALL BE IN AS NEAR FLIGHT CONFIGURATION AS POSSIBLE. HATCHES, EJECTION SEATS, AND THE AGE ECS ACCESS DOOR SHALL BE INSTALLED. POWER SHALL BE SUPPLIED VIA THE UMBILICAL.

(D) AGE REQUIRED

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|-----------------------------------|
| 52E180004 | COOLING & SERVICING UNIT |
| 52E180007 | ECS DOOR |
| 52E180014 | ECS CHECKOUT UNIT |
| 52E180027 | S/C LEAK TESTER |
| 52E180030 | GOX HIGH PRESSURE REGULATOR PANEL |
| 52E180033 | DEMAND REG. TOOL |
| 52E180047 | LIQH CANNISTER INSTALLATION KIT |

DATE 31 MAY 1968
REVISED 2 APRIL 1969
REVISED _____PAGE 97
REPORT E217
MODEL 195B2.4.9 ALTITUDE CHAMBER TEST - STDR B3-N93 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|--|
| 52E180048 | GOX CART - HOSE ASS'Y |
| 52E180076 | ECS TEST CONSOLE |
| 52E180077 | HOSE ASS'Y (HI PRESSURE) |
| 52E180078 | HOSE ASS'Y (HI PRESSURE) |
| 52E180103 | LEAKAGE TESTER HOSE ASS'Y |
| 52E180106 | TEST CONSOLE HOSE ASS'Y |
| 52E180107 | LEAKAGE TESTER HOSE ASS'Y |
| 52E180108 | LEAKAGE TESTER HOSE ASS'Y |
| 52E180113 | OXYGEN ANALYZER |
| 52E180120 | TEST CONSOLE HOSE ASS'Y |
| 52E180126 | LIQH SHIPPING CONTAINER |
| 52E180168 | HOSE ASS'Y (COOLANT) |
| 52E180169 | LEAKAGE TESTER HOSE ASS'Y |
| 52E180170 | TEST CONSOLE HOSE ASS'Y |
| 52E180172 | REFRIG. UNIT |
| 52E180183 | COOLANT PRESS. KIT |
| 58E181226 | HOSE ASSY'S - UMB HE/O ₂ |
| 58E181228 | CNTL PANEL - DUAL GAS |
| 58E181229 | CALIBRATION UNIT PO ₂ SENSOR |
| 52E190004 | COMMUNICATION TEST STATION |
| 52E190007-1 | HEADSET (1 REQ'D) |
| 52E190007-9 | HEADSET (2 REQ'D) |

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 98REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B

2.4.9 ALTITUDE CHAMBER TEST - STDR B3-H93 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|-----------------------|---|
| 52E190012 | C-BAND PROBE ASS'Y |
| * 58E190513-1 | FM CMD C/O STATION |
| 58E190514-25 | AMPLIFIER ASSEMBLY (2 REQ'D) |
| 52E200014 | CABLES |
| 52E230003 | RECORDER - S/C SEQ. |
| 52E230004 | CONSOLES SEQ TESTING & MONITOR |
| 52E230005 | EXTERNAL POWER SYSTEM CONTROL & MONITOR |
| 52E230008 | BLOCKHOUSE POWER SUPPLY |
| 52E230012 | SEQUENTIAL CONTROL AND MONITOR CONSOLE |
| 52E230038 (BLDG. 103) | SPACECRAFT POWER SUPPLY |
| 52E230068 | S/C TEST CONDUCTOR CONSOLE |
| 58E270803 | CDDS |
| 52E420007 | PROPULSION SYSTEM MONITOR CONSOLE (R23/24) |
| 52E440011 | PCM GROUND STATION (2 REQ'D) |
| 52E440052 | POWER SUPPLY FOR T/M REMOTE DISPLAYS |
| 52E440063 | T/M CONTROL CONSOLE |
| 52E440065 | DISTRIBUTION SYSTEM TIMER |
| 52T060181-7 | DEMAND REG. TOOL |
| 52T060181-9 | O ₂ SAMPLING ADAPTER |
| 52T060181-13 | S/C EXT. HATCH KEY |

* UNMANNED ONLY

MCDONNELL

ST. LOUIS, MISSOURI

DATE 31 MAY 1968PAGE 99REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B2.4.9 ALTITUDE CHAMBER TEST - STDR B3-B93 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--------------------|------------------------------|
| 52T060181-15 | EMERGENCY BATT. CART |
| 52T060181-17 | TEST CONTROL CONSOLE |
| 52T060181-25 | ORIFICE PLATE |
| 52T060181-29 | ORIFICE PLATE |
| 52T060183 | HOSE ASSEMBLIES |
| 52T060185 | INTEGRATED SYSTEM TESTER |
| 52T060191-1 | VOICE CHECK UNIT |
| 52T060231 | EMER. PWR OFF CONTROL BOX |
| 52T060231 | POWER CONTROL RELAY PANEL |
| 52T060231 | BATTERY CART |
| 52T060232 | CABLES |
| 52T060192-65 | CABLE |
| 52T060192-67 | CABLE |
| 52T060192-69 | CABLE |
| 52T060441-119 | TEST CABLES |
| * 52T060442-77 | COAX CABLE |
| * 52T060442-79 | COAX CABLE |
| 52T060442-149 | TEST CABLES |
| 52T060442-151 | TEST CABLES |
| * 58T060001 | F/M TELEMETRY GROUND STATION |
| * 58T060014-3 | F/M HARDLINE |
| 58D202037 | CABLES |
| 58D442054 | TELEMETRY JUNCTION BOX |

* UNMANNED ONLY

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 100

REVISED 2 APRIL 1969

REPORT E217

REVISED _____

MODEL 195B

2.4.9 ALTITUDE CHAMBER TEST - STDR B3-H93 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|--|--------------------------------------|
| MDE4583003 | CAPSULE LEAKAGE TESTER |
| 52-050484 | CABLES |
| 52-050850 | EMERGENCY EGRESS STAND |
| 52-050851 | EMERGENCY EGRESS HOIST |
| 52-050852 | TEST COND. CONSOLE ELECT. CABLING |
| 52-050854 | TEST COND. CONSOLE ELECT. CABLING |
| 52-050855 | GAS REG. ASS'Y |
| 52-050857 | BREAKOUT BOXES |
| 52-050858 | T.V. CAMERA BOOM |
| 52-050859 | SUIT HX SERVICE UNIT |
| 5283708 | QUICK DISCONNECTS |
| MODEL 260 | SIMPSON, VOM |
| MODEL 555 | TEKTRONIX SCOPE |
| MODEL 803B | FLUKEMETER |
| REMOTE C-BAND BEACON INTERROGATION RACK (R326) | |
| ASSORTED ATTENUATORS, COAX CABLES AND FITTINGS | |
| N/A | TB2 PWR CONSOLE (TQT) |
| N/A | TQT BACK UP BATT RACK |
| N/A | BIO MED SUIT HARNESS |
| GFE | (2) PRESSURE SUIT ASSEMBLY |
| GFE | HELMET ASSEMBLY (2) |
| GFE | DRC CHECK GAUGES |

DATE 31 MAY 1968REVISED 2 APRIL 1969

REVISED _____

PAGE 101REPORT E217MODEL 195B**2.4.9 ALTITUDE CHAMBER TEST - STDR B3-H93 (CONTINUED)****(E) TEST OUTLINE****(1) UNMANNED ALTITUDE RUN****(A) PERFORM A POWER-UP VERIFICATION OF SYSTEMS**

REQUIRED TO SUPPORT THE ECS PRIOR TO SECURING ALTITUDE CHAMBER (GO-NO-GO CHECK OF PWR, SEQ. COMM AND TM).

(B) SECURE CHAMBER, PUMP DOWN TO 150K FEET ALTITUDE

AND RETURN TO AMBIENT. DURING THE RUN, SPACE CRAFT POWER SHALL BE SUPPLIED EXTERNALLY THRU THE UMBILICALS. WATER TRANSFER TIMES AND EVAPORATIVE HEAT EXCHANGER OPERATING WILL BE VERIFIED. ALTITUDE SENSITIVE ECS FUNCTIONS WILL BE VALIDATED AT THIS TIME BY OPERATING WHILE AT ALTITUDE. THE CABIN PRESSURE RELIEF VALVE, SUIT DEMAND REGULATORS, CABIN PRESSURE REGULATOR, AND SUIT FANS WILL BE FUNCTIONALLY TESTED DURING THE ALTITUDE RUN. CALIBRATION VERIFICATION OF PARAMETERS REQUIRING ALTITUDE SHALL BE PERFORMED THROUGHOUT THE RUN. SAFETY ANEROID CHECK WILL THEN BE CONDUCTED BY PUMPING DOWN CHAMBER TO 61K FEET.

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 102

REVISED 2 APRIL 1969

REPORT E217

REVISED

MODEL 195B

2.4.9 ALTITUDE CHAMBER TEST - STD R B3-H93 (CONTINUED)

(E) TEST OUTLINE (CONTINUED)

(2) MANNED ALTITUDE RUN

NOTE

DURING MANNED CHAMBER TESTS, SAFETY PRECAUTIONS SUCH AS USE OF CABIN PRESSURE RELIEF VALVES, EMERGENCY COMMUNICATIONS SYSTEM AND STANDBY RESCUE TEAM WILL BE TAKEN.

- (A) POWER-UP, PERFORM A VERIFICATION OF SYSTEMS REQUIRED TO SUPPORT THE ECS.
- (B) INSERT SUITED CREWMEN AND SECURE CHAMBER FOR RUN.
- (C) VERIFY BIO MED AGE INSTR.
- (D) VERIFY DRC CHECK GAUGE INSTALLATION AT AMBIENT AND AT ALTITUDE.
- (E) PERFORM ALTITUDE RUN TO 15000 FEET AND RETURN TO AMBIENT.
- (F) PERFORM ECS/PSA INTERFACE TEST DURING BOTH PRESSURIZED AND DECOMPRESSED CABIN TESTS.
- (G) PERFORM CHECK ON OPTICAL SIGHT.

DATE 2 APRIL 1969PAGE 102A

REVISED _____

REPORT E217

REVISED _____

MODEL 195B2.4.10 VIBRATION TEST (UNMANNED VEHICLE GBQ #1 ONLY) - STDR B3-H92

(A) TEST OBJECTIVES

THE TEST SHALL DEMONSTRATE THE FUNCTIONAL INTEGRITY OF THE OPERATIONAL SPACECRAFT EQUIPMENT. A LOW-LEVEL SINUSIODAL SWEEP AND RANDOM VIBRATION TEST WILL BE CONDUCTED ON THE SPACECRAFT IN EACH MAJOR AXIS (X, Y AND Z).

SINUSIODAL VIBRATION FREQUENCIES AND LEVELS ARE THE SAME AS THOSE USED ON THE NASA GEMINI PROGRAM. THE FREQUENCIES ARE DIVIDED INTO THE DIFFERENT RANGES TO FACILITATE READOUT OF SPECIAL INSTRUMENTATION INSTALLED TO MONITOR VIBRATION LEVELS. RANDOM VIBRATION TIME SPANS ARE THE SAME AS THOSE USED ON THE NASA GEMINI PROGRAM. THE TIME SPAN IS APPROXIMATELY THE LENGTH OF TIME THE VEHICLE WILL SEE THIS VIBRATION LEVEL.

(B) SYSTEMS SERVICED

- (1) COOLANT SYSTEM
- (2) ECS PRIMARY O₂ (5,000 PSIG GN₂)
- (3) ECS SECONDARY O₂ (5,000 PSIG N₂)
- (4) RCS PRESSURANT (3,000 PSIG GN₂)
- (5) RCS PROPELLANT TANKS (125 PSIG N₂)
- (6) WATER SYSTEM (EXCEPT SUIT HX)
- (7) RCS REGULATED PRESSURE (125 PSIG GN₂)
- (8) ANALOG TAPE RECORDERS (GBQ #1 ONLY)
- (9) CAMERAS (GBQ #1 ONLY)

DATE 31 MAY 1968PAGE 103REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B

2.4.10 VIBRATION TEST (UNMANNED VEHICLE GBQ #1 ONLY) - STDR B3-H92
(CONTINUED)

(C) LOCATION AND CONFIGURATION

THE ASSEMBLED SPACECRAFT SHALL BE MOUNTED ON THE VIBRATION FIXTURE IN A VERTICAL POSITION. CONFIGURATION WILL BE AS FOLLOWS:

- (1) THE INSTRUMENTATION PALLETS WILL BE INSTALLED
(INCLUDING FLIGHT BATTERIES).
- (2) ALL ACCESS DOORS INSTALLED.
- (3) C-BAND ANTENNA SYSTEM COVERS REMOVED.
- (4) STUB ANTENNA COVER REMOVED.
- (5) BATTERIES (S/C POWER INSTALLED AND SERVICED).
- (6) LESS INSTALLED IN ASCENT AND ABORT SQUIB CKTS.
- (7) THE FOLLOWING SYSTEMS SHALL BE PRESSURIZED TO OPERATING PRESSURE AND MONITORED DURING AND AFTER VIBRATION FOR LEAKAGE.
 - (A) RCS PRESSURANT TANKS, FUEL AND OXIDIZER PROPELLANT TANKS.
 - (B) PRIMARY O₂ AND SECONDARY O₂ - (5,000 PSIG GN₂)
 - (C) COOLANT - COOLANCL 15
 - (D) WATER TANKS
- (8) THE COOLANT SYSTEM AND SUIT FANS SHALL BE OPERATING.

DATE 2 APRIL 1969

ST. LOUIS, MISSOURI

PAGE 103A

REVISED _____

REPORT E217

REVISED _____

MODEL 195B**2.4.10 VIBRATION TEST (UNMANNED VEHICLE GBQ #1 ONLY) - STDR B3-H92
(CONTINUED)****(D) AGE REQUIRED**PART NUMBERNOMENCLATURE

52E180014

ECS C/O UNIT

52E180183

PRESSURIZATION KIT

52E190004

COMMUNICATION TEST STATION

52E200004

TESTER UMBILICAL CABLE

52E270062

RECORDER ASS'Y - GUIDANCE
AND CONTROL SYSTEM TEST

52E400004

TESTER PORTABLE PYROTECHNIC

52E420007

PROPULSION SYSTEM MONITOR
CONSOLE (R23/24)

52E440011

PCM GROUND STATION

52E440052

T/M POWER SUPPLY - REMOTE
DISPLAY

52E440063

T/M CONTROL ASSEMBLY

52E440065

DISTRIBUTION SYSTEM TIMER

52T060191-5

C-BAND TEST ANTENNA

52T060231

BATTERY CART

52T060232

CABLE

58T060001

F/M TELEMETRY GROUND STA.

58T060014

ADAPT CABLE

58T060023

LATCH RLYS RESET & MONITOR ASS'Y

DATE 31 MAY 1968PAGE 104REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B

2.4.10 VIBRATION TEST (UNMANNED VEHICLE GBQ #1 ONLY) - STDR B5-H92
 (CONTINUED)

(D) AGE REQUIRED (CONTINUED)

| <u>PART NUMBER</u> | <u>NOMENCLATURE</u> |
|---------------------|--|
| 58D202037 | CABLES |
| 58324-5 | CABLE |
| RACKS 327, 328, 329 | COMMUNICATION VSWR CART |
| | REMOTE C-BAND BEACON INTERROGATION RACK (R326) |
| | ASSORTED ATTENUATORS, COAX CABLES, FITTINGS, AND VHF |
| | TEST ANTENNAS. |

(E) TEST OUTLINE

- (1) SPACECRAFT INSTALLED IN A VERTICAL POSITION ON THE HORIZONTAL VIBRATION FIXTURE AT SPACECRAFT/LAB ATTACH POINTS. HORIZONTAL FIXTURE ALLOWS FOR VIBRATION OF S/C IN THE TWO HORIZONTAL AXIS.
- (2) PYRO SIMULATOR VERIFICATION
- (3) CONDUCT LOW-LEVEL SINUSOIDAL VIBRATION AS FOLLOWS:

| <u>FREQUENCY</u> | <u>LEVEL</u> |
|------------------|--------------|
| 5 - 50 Hz | + 0.1 G |
| 50 - 90 Hz | + 0.5 G |
| 90 - 500 Hz | + 1.0 G |

DATE 31 MAY 1968
REVISED 2 APRIL 1969
REVISED _____

MCDONNELL
ST. LOUIS, MISSOURI

PAGE 105
REPORT E217
MODEL 195B

2.4.10 VIBRATION TEST (UNMANNED VEHICLE GBQ #1 ONLY) - STDR B3-H92
(CONTINUED)

(E) TEST OUTLINE (CONTINUED)

- (4) PERFORM EQUALIZATION RUN AND ADJUST FILTER EQUALIZER TO OBTAIN PROPER FREQUENCY SPECTRAL DENSITY.
- (5) POWER-UP S/C AND EVALUATE SYSTEM OPERATION VIA TM.
- (6) CONDUCT ONE-MINUTE RANDOM VIBRATION AT 7.4 GRMS FROM 20 TO 2000 Hz.
- (7) RECORD AMBIENT DATA FOR ONE MINUTE AFTER COMPLETING RUN.
- (8) POWER-DOWN S/C AND REMOVE ANALOG T/R AND EVALUATE DATA.
- (9) PYRO SIMULATOR VERIFICATION
- (10) INSTALL S/C IN VERTICAL POSITION ON THE VERTICAL VIBRATION FIXTURE AT SPACECRAFT/LAB ATTACH POINTS.
- (11) CONDUCT LOW-LEVEL HAND PROBE READOUT (SAME AS ITEM E3)
- (12) PERFORM EQUALIZATION RUN AND ADJUST FILTER EQUALIZER TO OBTAIN PROPER FREQUENCY SPECTRAL DENSITY.
- (13) PYRO SIMULATOR VERIFICATION
- (14) POWER-UP S/C AND EVALUATE SYSTEMS OPERATIONS.
- (15) CONDUCT ONE-MINUTE RANDOM VIBRATION AT 7.4 GRMS FROM 20 TO 2000 Hz.
- (16) RECORD AMBIENT DATA FOR ONE MINUTE AFTER COMPLETING RUN.
- (17) MAKE PLAYBACK OF PCM T/R
- (18) POWER-DOWN S/C REMOVE ANALOG T/R, CAMERA AND EVALUATE DATA.
- (19) PYRO SIMULATOR VERIFICATION

DATE 31 MAY 1968PAGE 106

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.4.10 VIBRATION TEST (UNMANNED VEHICLE GBQ #1 ONLY - STDR B3-H92
(CONTINUED)

(E) TEST OUTLINE (CONTINUED)

(20) REMOVE S/C FROM VIBRATION FIXTURE.

(21) AFTER VIBRATION PERFORM FOLLOWING COAXIAL CABLE

VSWR MEASUREMENT PER STDR B3-E42:

(A) FROM TM XMTR TO NOSE STUB ANTENNA AND
DESCENT ANTENNA.

(B) FROM RECOVERY BEACON TO RECOVERY ANTENNA
AND NOSE STUB ANTENNA.

(C) FROM VHF T/R #1 AND VHF T/R #2 TO NOSE STUB
ANTENNA AND DESCENT ANTENNA.

(D) FROM HF T/R TO HF WHIP ANTENNA.

(E) FROM C-BAND BEACON TO C-BAND BEACON ANTENNA
SYSTEM.

DATE 31 MAY 1968PAGE 107REVISED 2 APRIL 1969REPORT E217

REVISED _____

MODEL 195B

2.5 MISCELLANEOUS PROCEDURES

CERTAIN OTHER PROCEDURES WILL BE PROVIDED THAT ARE CONSIDERED IN A SUPPORT CAPACITY IN THEIR APPLICATION TO THE OVERALL TEST OUTLINE. THESE STDR'S ARE COVERED IN THE FOLLOWING SUB-PARAGRAPHS SINCE MOST OF THEM INVOLVE OPERATIONS NOT SPECIFICALLY AFFECTING TEST PHILOSOPHY OR OBJECTIVES.

2.5.1 SPACECRAFT MATING AND DEMATING PROCEDURES - STDR B3-E204

(A) MATING AND DEMATING PROCEDURES FOR:

- (1) RCS SECTION TO CABIN
- (2) RECOVERY SECTION TO RCS SECTION
- (3) CABIN TO ADAPTER
- (4) NOSE FAIRING INSTALLATION

2.5.2 PREPARATION FOR SHIPMENT - STDR B3-H208

- #### (A) THIS STDR PROVIDES DETAILED CHECK LISTS FOR PREPARING THE SPACECRAFT FOR SHIPMENT. CHECKLISTS ARE PROVIDED FOR EACH SPACECRAFT MODULE TO VERIFY INTERFACE WIRE BUNDLES ARE COVERED, FREE WIRE BUNDLES ARE COVERED, ACTIVE BATTERIES ARE NOT INSTALLED, HATCHES ARE CLOSED, SHINGLES INSTALLED, ACCESS DOORS INSTALLED AS REQUIRED, TCS NOZZLE DUST PLUGS INSTALLED, COOLANT SYSTEM SERVICED, RCS SYSTEM PADDED, ETC. AND S/C TUMBLED.

2.5.3 SPACECRAFT HANDLING PROCEDURES - STDR B3-E203

- (A) GENERAL HANDLING PROCEDURES
- (B) RECOVERY SECTION HANDLING

DATE 31 MAY 1968

MCDONNELL

ST. LOUIS, MISSOURI

PAGE 108

REVISED _____

REPORT E217

REVISED _____

MODEL 195B

2.5.3 SPACECRAFT HANDLING PROCEDURES - STDR B3-E203 (CONTINUED)

- (C) RCS SECTION HANDLING
- (D) CABIN SECTION HANDLING
- (E) HEAT SHIELD HANDLING
- (F) ADAPTER HANDLING
- (G) ADAPTER HANDLING ON WEIGHING AND CENTER OF GRAVITY INDEXING FIXTURE.
- (H) RE-ENTRY MODULE HANDLING ON WEIGHING AND CENTER OF GRAVITY INDEXING FIXTURE.
- (I) SPACECRAFT HANDLING
- (J) RE-ENTRY MODULE HANDLING ON SPACECRAFT DOLLY.
- (K) RE-ENTRY MODULE HANDLING ON RE-ENTRY MODULE HANDLING DOLLY.
- (L) SPACECRAFT HANDLING ON VERTICAL TRANSPORTATION TRAILER.
- (M) SPACECRAFT HANDLING ON HORIZONTAL TRANSPORTATION TRAILER.
- (N) SPACECRAFT LOADING IN AIRCRAFT.
- (O) SPACECRAFT HANDLING LIMITATIONS.

2.5.4 SPACECRAFT RIGGING AND ALIGNMENT - STDR B3-E201

- (A) THIS STDR PROVIDES INSTRUCTIONS FOR RCS/RECOVERY SECTION SHINGLE INSTALLATION, HEAT SHIELD HATCH ALIGNMENT, RIGGING OF EJECTION SEATS AND INSTALLATION, AND OPERATIONAL CHECKOUT PROCEDURES.

2.5.5 SPACECRAFT TEST POINT LIST - STDR B3-1

- (A) THIS STDR PROVIDES A LISTING OF SPACECRAFT TEST POINTS, SIGNALS, USAGE AND REFERENCE DRAWINGS.

MCDONNELL

DATE 31 MAY 1968

ST. LOUIS, MISSOURI

PAGE 109

REVISED 2 APRIL 1969

REPORT E217

REVISED _____

MODEL 195B

2.5.6 SPACECRAFT CABLING HOOK-UP BY STDR IMAGE - STDR B3-H205

- (A) THIS STDR ESTABLISHES THE INITIAL CABLING REQUIREMENTS FOR EACH TEST STDR, UNLESS REQUIREMENTS ARE SPECIFIED IN THE TEST STDR.

2.5.7 COMPLEX VALIDATION - STDR B5-3

- (A) THIS TEST SHALL FUNCTIONALLY VERIFY ALL COMPLEX SIGNAL PATHS AS WELL AS OPERATION OF THE AGE END ITEMS. (EXCEPT G & C SIGNALS).

2.5.8 COMPLEX VALIDATION (G & C SIMULATOR) - STDR B5-4

- (A) THESE PROCEDURES ARE UTILIZED FOR PERFORMING VALIDATION TESTS OF THE GUIDANCE AND CONTROL COMPLEX CABLING ALONG WITH A FUNCTIONAL TEST OF THE G & C AGE EQUIPMENT.

2.5.9 SPACECRAFT SERVICING - STDR B3-E206

- (A) THIS STDR PROVIDES COOLANT SERVICING AND DESERVICING PROCEDURES, WATER SERVICING AND DESERVICING, PRIMARY O₂, SECONDARY O₂ ANALOG TAPE RECORDER AND CAMERA SERVICING PROCEDURES. ALSO INCLUDES RCS DESERVICING AND PADDING.

2.5.10 SPACECRAFT ALIGNMENT - STDR B3-H200

- (A) THIS PROCEDURE ALIGNS THE OPTICAL SIGHT AND ACCELEROMETERS WITH THE INERTIAL PLATFORM MOUNTING BASE (COLD-PLATE). THE OPTICAL SIGHT AND ACCELEROMETERS SHALL BE ALIGNED TO THE SPACECRAFT GEOMETRIC AXIS.